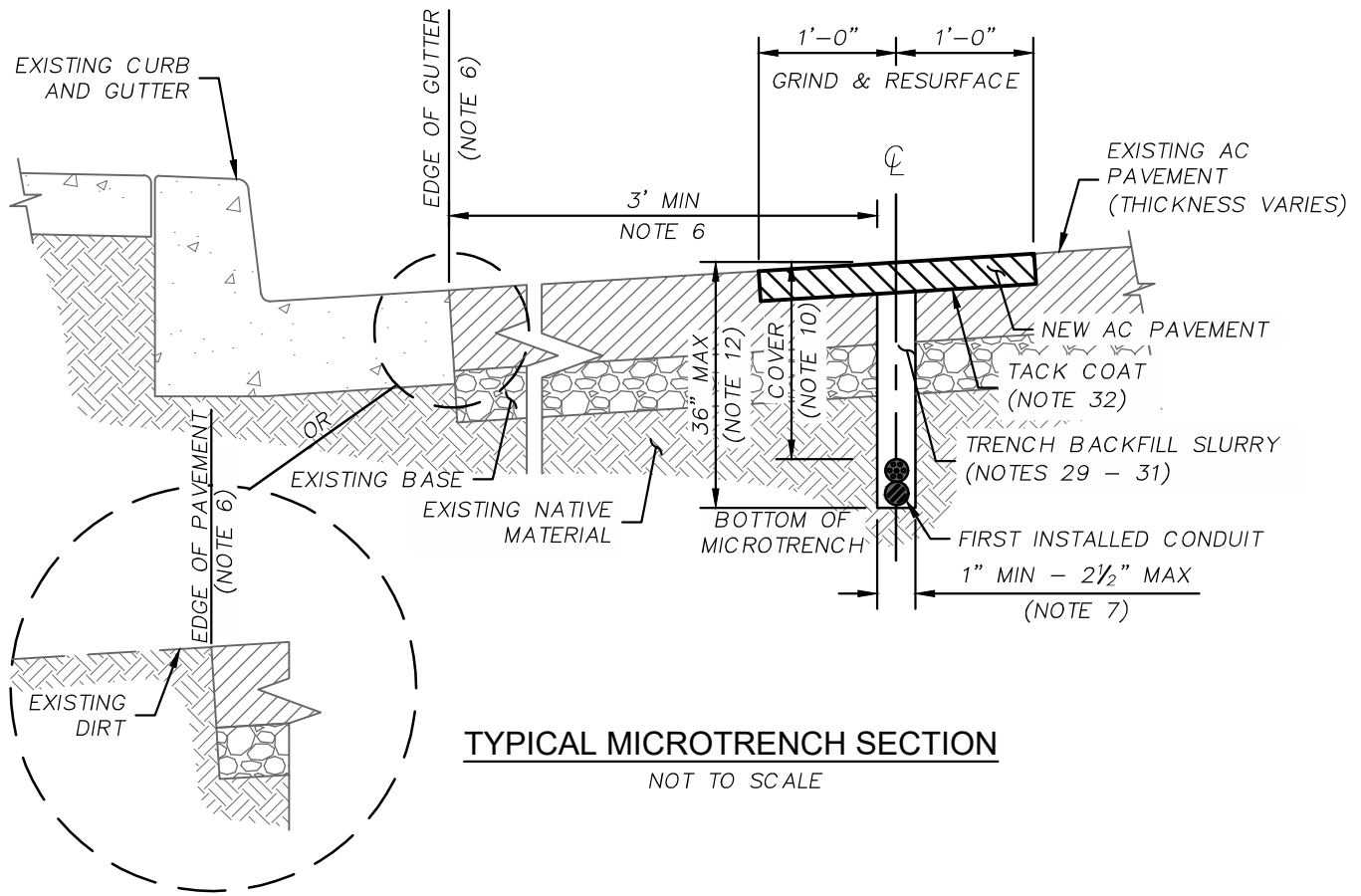


Public Works
Engineering Division

City of Berkeley
Standard Details

Streets and Sidewalks



TYPICAL MICROTRENCH SECTION

NOT TO SCALE

GENERAL NOTES

1. MICROTRENCH FOR FIBER OPTIC TELECOMMUNICATION FACILITIES MAY BE INSTALLED AS APPROVED BY THE CITY ENGINEER.
2. MICROTRENCHES SHALL BE INSTALLED WITHIN ASPHALT CONCRETE PAVED STREETS. MICROTRENCHES WITHIN CONCRETE PAVED STREETS AND SPECIAL PAVEMENT AREAS ARE NOT PERMITTED UNLESS APPROVED BY THE CITY ENGINEER. SPECIAL PAVEMENT AREAS INCLUDE, BUT ARE NOT LIMITED TO, BUS PADS, BULB-OUTS, RAISED CROSSWALKS, ISLANDS, ROUNDABOUTS, SPEED HUMPS, DECORATIVE OR STAMPED PAVEMENTS, AND OTHER SIMILAR FEATURES.
3. A MAXIMUM OF TWO (2) MICROTRENCH INSTALLATIONS ARE ALLOWED PER STREET AND SHALL BE INSTALLED ON OPPOSITE SIDES OF THE STREET. THIS DOES NOT INCLUDE LATERAL CROSSINGS.
4. MICROTRENCH SHALL ADHERE TO PAVING MORATORIUM REQUIREMENTS PER BMC SECTION 16.12.030.
5. DAMAGE TO EXISTING CONCRETE CURB, GUTTER, SIDEWALK, PAVEMENT, AND OTHER IMPROVEMENTS AS A RESULT OF MICROTRENCH ACTIVITIES SHALL BE REMOVED AND RESTORED IN-KIND AS DIRECTED BY THE CITY.

MICROTRENCH

6. MICROTRENCH SHALL BE LOCATED 3- FEET FROM THE LIP OF GUTTER OR EDGE OF PAVEMENT/FACE OF VERTICAL CURB WHEN NO GUTTER EXISTS. ANY MICROTRENCH LESS THAN 3- FEET FROM THE LIP OF GUTTER OR EDGE OF PAVEMENT SHALL BE APPROVED BY THE CITY ENGINEER.



CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

**STANDARD DETAIL
MICROTRENCH SECTION**

APPROVED:

RONALD A. NEVELS, RCE (62524)
CITY ENGINEER

05/10/24
DATE

WAHID A. AMIRI, RCE (70918)
DEPUTY PUBLIC WORKS DIRECTOR

05/10/24
DATE

DESIGN: _____

DRAWN: _____

CHECK: _____

DATE: 05/10/24

SCALE: N.T.S.

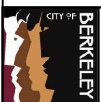


PLAN: ST-01

SHEET: 01 OF 03

7. MICROTRENCH WIDTH SHALL BE 1-INCH MINIMUM TO 2½-INCH MAXIMUM. MICROTRENCH WIDTHS GREATER THAN 2.5-INCHES REQUIRE APPROVAL FROM CITY ENGINEER.
8. MICROTRENCH CUTS SHALL HAVE THREE (3) MAXIMUM CUTS TO ACHIEVE A RADIAL BEND OR SWEEP.
9. MICROTRENCH CROSSINGS SHALL BE INSTALLED PERPENDICULAR TO THE STREET AND AT INTERVALS NO LESS THAN 300- FEET.
10. THE MINIMUM COVER FOR A MICROTRENCH LOCATED WITHIN A PAVED STREET OR PARKING LANE SHALL BE 12-INCHES ON RESIDENTIAL STREETS, 16-INCHES ON COLLECTOR STREETS, AND 23-INCHES ON ARTERIAL STREETS AS MEASURED FROM THE UPPER CONDUIT TO THE FINISHED GRADE SURFACE OF THE PAVED STREET OR PARKING LANE.
11. THE MINIMUM COVER FOR A MICROTRENCH LOCATED WITHIN A CONCRETE CURB, GUTTER, OR SIDEWALK SHALL BE 8-INCHES, AS MEASURED FROM THE UPPER CONDUIT TO THE BOTTOM OF CONCRETE.
12. THE MAXIMUM DEPTH OF A MICROTRENCH SHALL BE NO GREATER THAN 36-INCHES AS MEASURED FROM THE FINISHED GRADE SURFACE TO THE BOTTOM OF THE MICROTRENCH.
13. MICROTRENCH SHALL PROVIDE 5- FEET OF HORIZONTAL SEPARATION BETWEEN ANY EXISTING UTILITY ASSET (SANITARY SEWER MAIN, SANITARY SEWER LATERAL, WATER MAIN, FIRE HYDRANT, WATER SERVICE LATERAL, WATER METER, STORM INLET, STORM LINE, ETC.) AS MEASURED FROM THE OUTER EDGE OF THE MICROTRENCH CONDUIT TO THE OUTER EDGE OF THE EXISTING UTILITY ASSET.
14. ANY PROPOSED LOCATIONS NOT MEETING THE MINIMUM HORIZONTAL SEPARATION REQUIREMENTS BETWEEN THE MICROTRENCH CONDUIT AND EXISTING UTILITY ASSET SHALL BE CLEARLY IDENTIFIED ON PLANS. THE CITY MUST REVIEW AND APPROVE EACH SUCH OCCURRENCE PRIOR TO THE START OF CONSTRUCTION.
15. WHEN CROSSING A PUBLIC UTILITY ASSET, THE MICROTRENCH SHALL CROSS PERPENDICULAR TO THE PUBLIC UTILITY ASSET. CROSSINGS SHALL NOT BE LESS THAN 45-DEGREES.
16. PAVEMENT CUTS SHALL BE STRAIGHT AND CLEAN. TO FACILITATE STRAIGHT PAVEMENT CUTS, SPALLS AND POTHOLES WITHIN 12-INCHES OF THE MICROTRENCH SHALL BE REPAIRED PRIOR TO THE START OF CONSTRUCTION.
17. DURING MICROTRENCH EXCAVATION, SURFACE CUTTINGS AND GRINDINGS SHALL BE VACUUMED AND CLEANED WITH WATER. SHALL BE VACUUMED AND CLEANED WITH WATER. AFTER CLEANING WITH WATER, THE TRENCH SHALL BE DRIED WITH COMPRESSED AIR, FOLLOWED BY HOT AIR USING A BLOWPIPE.
18. IT IS THE RESPONSIBILITY OF THE MICROTRENCH UTILITY OWNER OR CONTRACTOR TO VERIFY THAT THE MINIMUM COVER, HORIZONTAL SEPARATION, VERTICAL CLEARANCE, AND MAXIMUM DEPTH CAN BE MAINTAINED WITHOUT CONFLICT TO ADJACENT EXISTING UTILITY ASSETS.
19. THE MICROTRENCH UTILITY OWNER OR CONTRACTOR SHALL IDENTIFY ALL EXISTING UTILITIES ASSETS, INCLUDING SERVICE CONNECTIONS IN THE FIELD. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (U.S.A) AT 8-1-1 OR 1-800-422-4133 AT LEAST 48-HOURS PRIOR TO THE START OF CONSTRUCTION. THE MICROTRENCH UTILITY OWNER OR CONTRACTOR SHALL POT HOLE ALL CROSSING AND PARALLEL UTILITIES WITHIN 24-INCHES OF THE PROPOSED MICROTRENCH ALIGNMENT TO DETERMINE THE EXISTING UTILITY ASSET LOCATION AND DEPTH.
20. THE MICROTRENCH UTILITY OWNER OR CONTRACTOR IS RESPONSIBLE FOR CONTACTING AND COORDINATING MICROTRENCH CONSTRUCTION ACTIVITIES WITH ANY POTENTIALLY AFFECTED EXISTING UTILITY ASSETS OWNERS.
21. MICROTRENCH UTILITY OWNER OR CONTRACTOR SHALL PROVIDE WRITTEN AUTHORIZATION FROM ALL EXISTING UTILITY ASSET OWNERS WITHIN 5- FEET OF THE PROPOSED MICROTRENCH ALIGNMENT PRIOR TO THE START OF CONSTRUCTION.

MICROTRENCH CONDUIT

22. CONDUIT SHALL BE 2-INCH (MAXIMUM) DIAMETER SCHEDULE 40 PVC/HDPE OR EQUIVALENT.

	<p>CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS</p>	<p>STANDARD DETAIL MICROTRENCH SECTION</p>		
<p>APPROVED: </p> <hr/> <p>RONALD A. NEVELS, RCE (62524) CITY ENGINEER</p>		<p>05/10/24 DATE</p>		
<p></p> <hr/> <p>WAHID A. AMIRI, RCE (70918) DEPUTY PUBLIC WORKS DIRECTOR</p>		<p>05/10/24 DATE</p>		
		<p>DESIGN: _____</p> <p>DRAWN: _____</p> <p>CHECK: _____</p>	<p>DATE: 05/10/24</p> <p>SCALE: N.T.S.</p>	<p>PLAN: ST-01</p> <p>SHEET: 02 of 03</p>

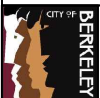
23. A MAXIMUM OF TWO (2) VERTICALLY STACKED CONDUITS SHALL BE PLACED WITHIN THE MICROTRENCH.
24. CONDUIT SHALL BE FIRMLY SECURED IN THE MICROTRENCH USING ANCHORS AND SPACERS TO PREVENT AIR GAPS BETWEEN THE CONDUIT/CABLE AND THE BOTTOM OF MICROTRENCH OR ANOTHER CONDUIT.
25. CONDUIT ANCHORS AND SPACERS SHALL BE PLACED AT 10-FOOT (MAX) INTERVALS ALONG THE CONDUIT TO ENSURE CONDUIT REMAINS AT REQUIRED DEPTHS DURING INSTALLATION AND BACKFILLING.
26. INSTALL FOLDED WARNING/IDENTIFICATION TAPE ALONG THE ENTIRE LENGTH OF THE CONDUIT.
27. MICROTRENCH SHALL BE IDENTIFIED WITH A CALLOUT ON THE PULL/JUNCTION BOX LID WITH THE NAME OF THE OWNER OF THE MICROTRENCH.
28. A CURB MARKER DISK (OPTIONAL) MAY BE ATTACHED TO THE TOP OF CURB TO PROVIDE WARNING OF SHALLOW CONDUIT.

MICROTRENCH BACKFILL

29. MICROTRENCH SHALL BE COMPLETELY BACKFILLED WITH A CEMENT SAND SLURRY (2,000 PSI MINIMUM) TO FINISHED GRADE.
30. MICROTRENCH UTILITY OWNER OR CONTRACTOR SHALL USE A VIBRATOR TO MINIMIZE VOIDS WITHIN THE SLURRY BACKFILL.
31. ALLOW SLURRY BACKFILL TO CURE A MINIMUM OF THREE (3) HOURS PRIOR TO OPENING THE STREET TO TRAFFIC AND PRIOR TO PERFORMING FINAL MICROTRENCH RESTORATION (SEE NOTES BELOW).

MICROTRENCH MILLING, RESURFACING, & RESTORATION

32. WITHIN SEVEN (7) DAYS OF PLACING THE SLURRY BACKFILL, THE SLURRY BACKFILL AND EXISTING PAVEMENT SHALL BE MILLED 12-INCHES (MINIMUM) ON EACH SIDE OF THE MICROTRENCH AT A DEPTH OF 4-INCHES. THE MILLED AREA SHALL BE CLEANED OF ALL DEBRIS, TACKED WITH AN ASPHALTIC EMULSION, AND RESURFACED WITH 1/2-INCH TYPE II AC.
33. MILL, RESURFACE, AND RESTORATION LIMITS SHALL EXTEND THE FULL WIDTH OF THE BIKE LANE WHEN MICROTRENCH INSTALLATION IS WITHIN A BIKE LANE.
34. RESTORE ALL EXISTING TRAFFIC STRIPING AND PAVEMENT MARKINGS IN-KIND.
35. RESTORE CONCRETE SURFACES TO NEAREST SCORE LINE AND DOWEL INTO EXISTING CONCRETE.



CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL
MICROTRENCH SECTION

APPROVED:

RONALD A. NEVELS, RCE (62524)
CITY ENGINEER

05/10/24
DATE

WAHID A. AMIRI, RCE (70918)
DEPUTY PUBLIC WORKS DIRECTOR

05/10/24
DATE

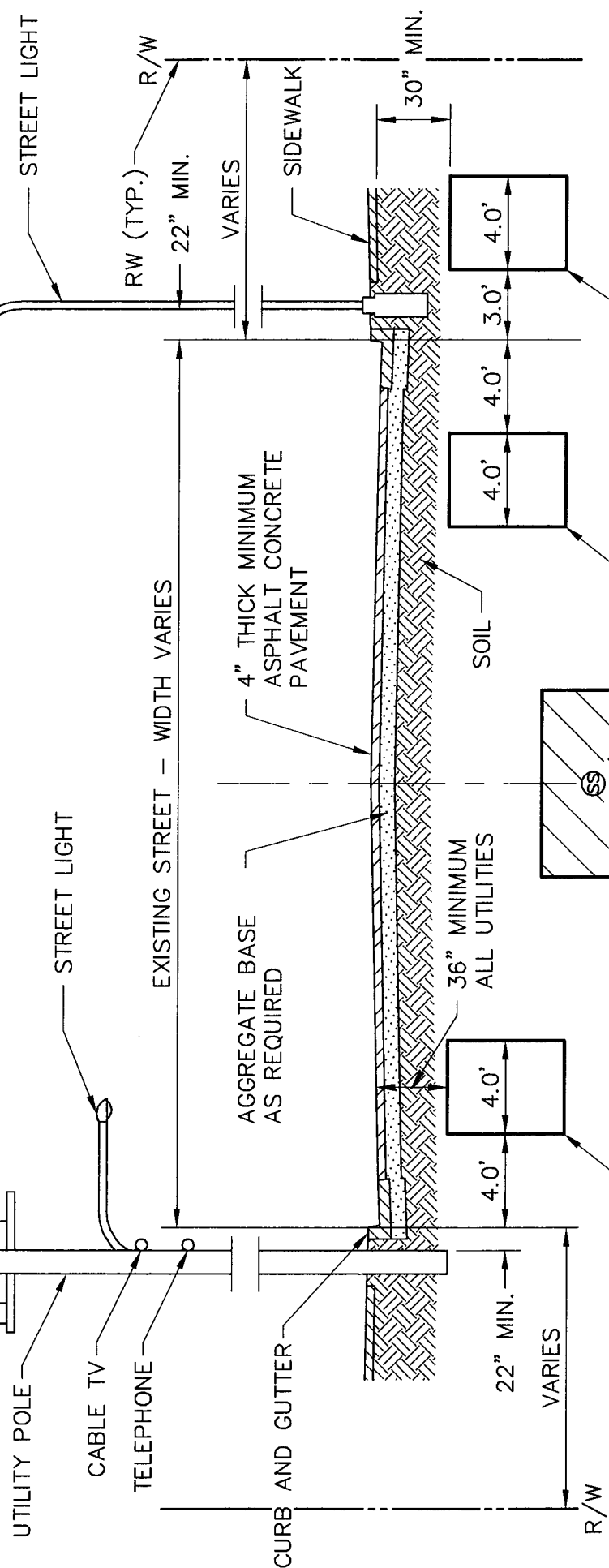
DESIGN: _____
DRAWN: _____
CHECK: _____

DATE: 05/10/24
SCALE: N.T.S.

PLAN: ST-01
SHEET: 03 OF 03

NOTE 1: DETAIL SHOWN IS FOR INFORMATION ONLY, INDICATING THE PREFERRED AREAS FOR THE LOCATION OF UTILITY UPGRADES IN THE RIGHT OF WAY. THIS DETAIL DOES NOT REPRESENT THE EXISTING UTILITY LOCATIONS IN THE RIGHT OF WAY.

HIGH VOLTAGE ELECTRICAL
 SECONDARY ELECTRICAL

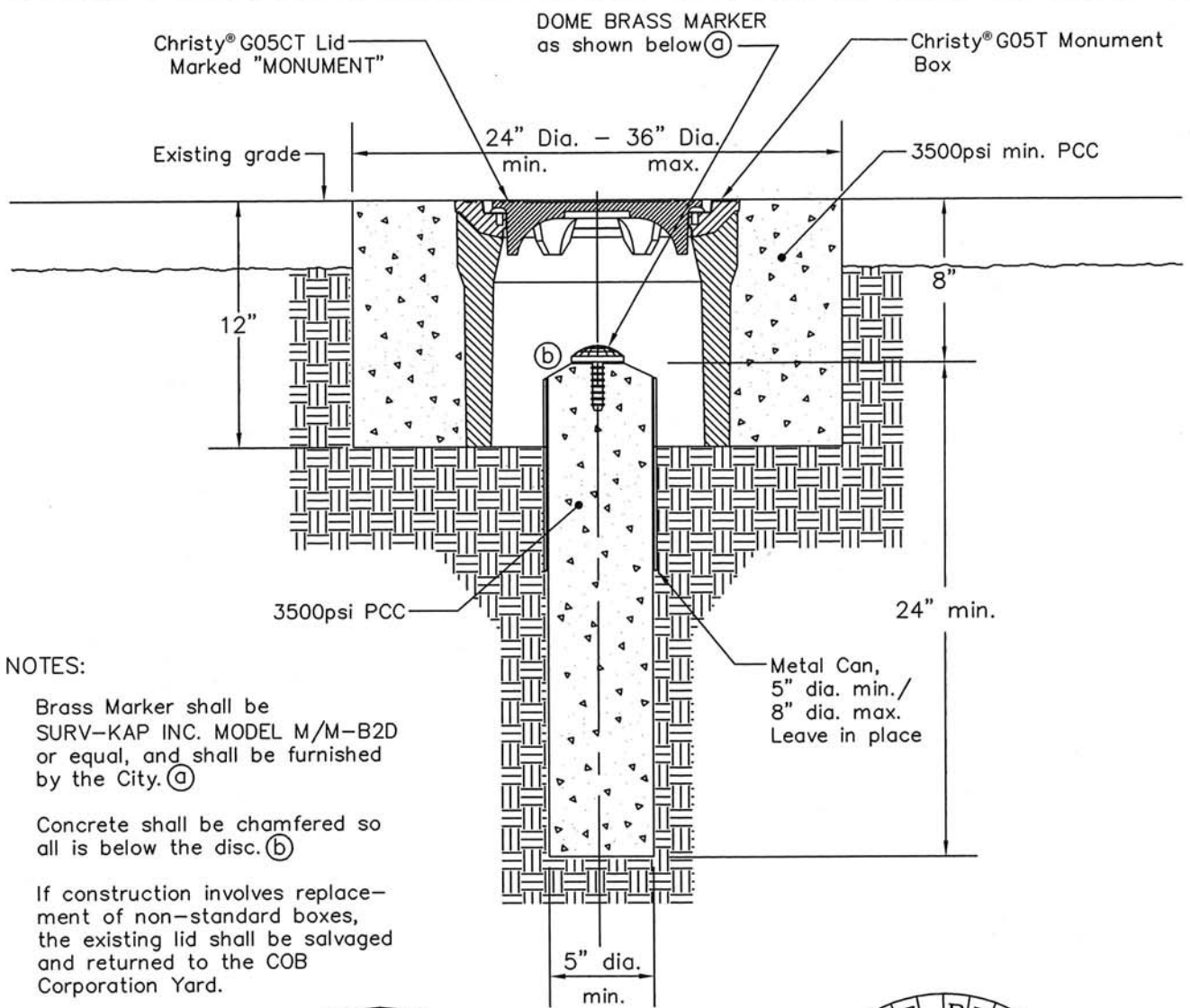


STREET LIGHT
 RW (TYP.)
 22" MIN.
 VARIES
 SIDEWALK
 30" MIN.
 AREA FOR GAS OR WATER MAIN (SEE NOTE 1)
 4.0'
 AREA FOR SANITARY SEWER (SS) AND STORM DRAIN (SD) MAINS (SEE NOTE 1)
 4.0'
 4.0'
 3.0'
 AREA FOR UNDERGROUNDING ELECTRICAL, TELEPHONE AND CABLE TV CONDUIT SUB-STRUCTURES (SEE NOTE 1)
 4.0'
 4.0'

4" THICK MINIMUM ASPHALT CONCRETE PAVEMENT
 SOIL
 36" MINIMUM ALL UTILITIES
 SS
 SD
 12.0'

UTILITY POLE
 CABLE TV
 TELEPHONE
 CURB AND GUTTER
 R/W
 22" MIN.
 VARIES
 AREA FOR GAS OR WATER MAIN (SEE NOTE 1)
 AREA FOR SANITARY SEWER (SS) AND STORM DRAIN (SD) MAINS (SEE NOTE 1)

STANDARD DETAIL STREET CROSS-SECTION FOR UTILITY PLACEMENT	SUBMITTED: <i>Robert J. Lattin</i> SUPERVISING CIVIL ENGINEER	DATE: 1/20/00 R.C.E. 18005 EXP. 6/30/01	CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS	PLAN: 7597 FILE: 20B-143
	APPROVED: <i>[Signature]</i> MANAGER OF ENGINEERING	DATE: 1/20/00 R.C.E. 23818 EXP. 12/31/01	DESIGN: HH DRAWN: MS CHECK:	DATE: 9/99 SCALE: NTS BOOK:

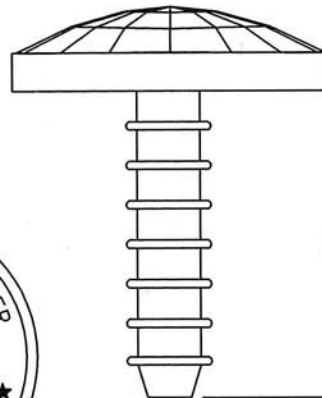


NOTES:

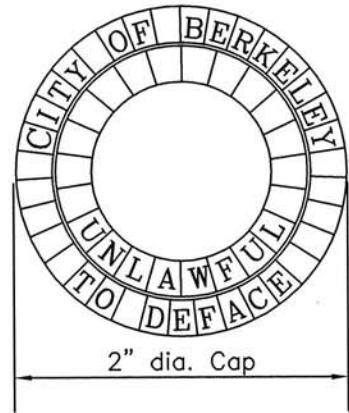
Brass Marker shall be SURV-KAP INC. MODEL M/M-B2D or equal, and shall be furnished by the City. (a)

Concrete shall be chamfered so all is below the disc. (b)

If construction involves replacement of non-standard boxes, the existing lid shall be salvaged and returned to the COB Corporation Yard.



2-1/2" stem

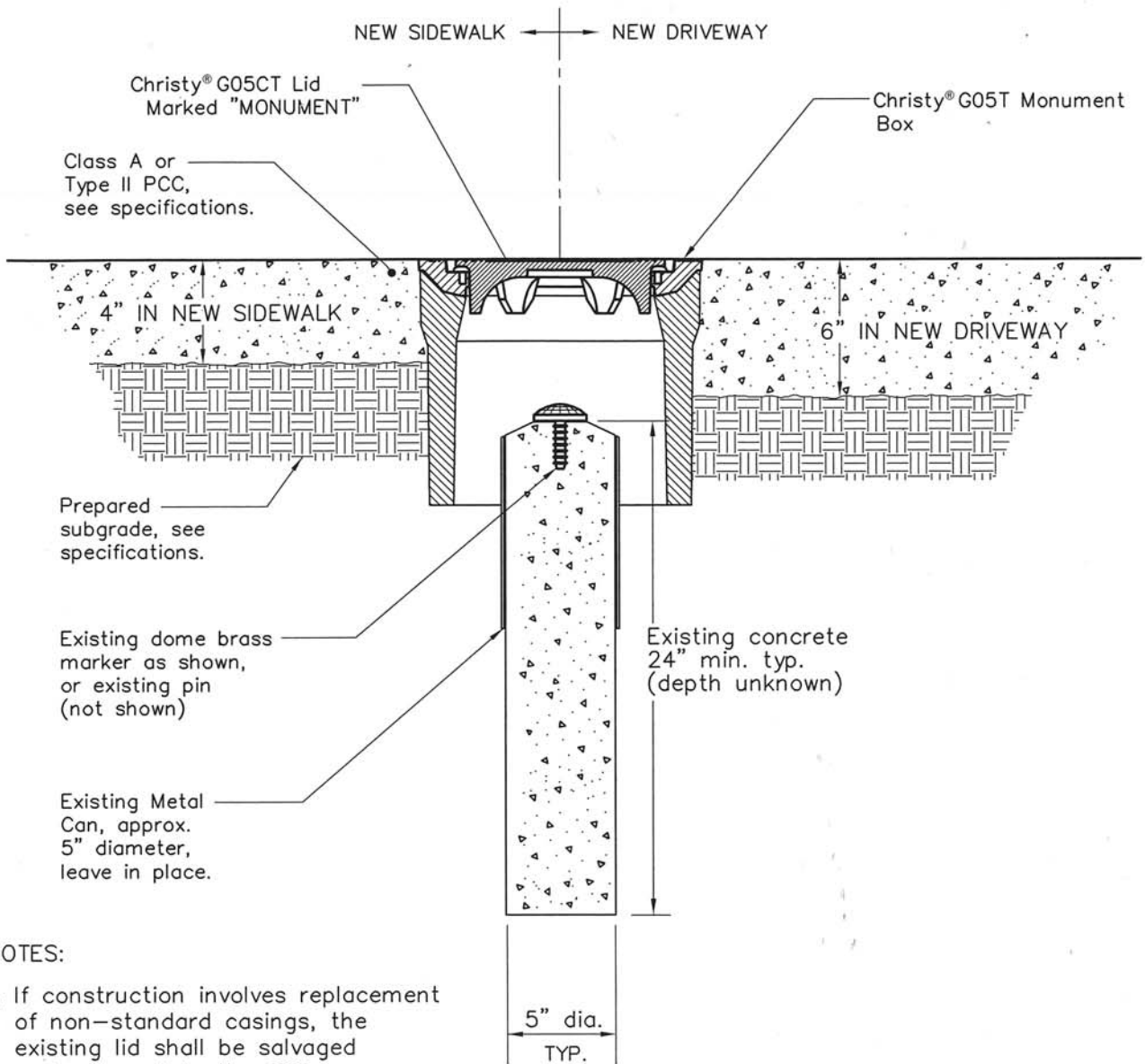


2" dia. Cap

DOME BRASS MARKER

NOTE: This Drawing Supersedes COB Plan 7063, File: 20 B-120 MCT-12/2013

1	DOME BRASS MARKER TO BE FURNISHED BY THE CITY	DATE: 11/2010
2	REVISED DETAIL TO INCLUDE NEW STANDARD CHRISTY®G05T BOX & LID	DATE: 12/2013
3	UPDATE STANDARD SETTING AND REVISED TITLE BLOCK	DATE: 12/2015
4	REVISED STANDARD SETTING TO FULL CONCRETE COLLAR FLUSH w/EX. GRADE	DATE: 11/2017
DESIGN: MCT	DATE: 11/2017	PLAN: 8090
DRAWN: MCT	SCALE: N.T.S.	FILE: 20-B-153
CHECK: NAP		
APPROVED:	11-17-17	
CITY ENGINEER	DATE:	
CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL		
STANDARD CITY MONUMENT		



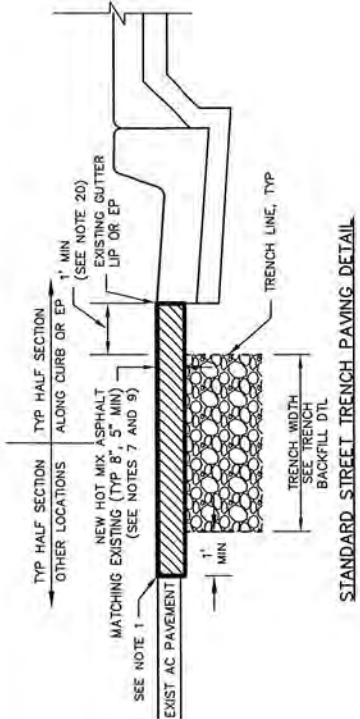
NOTES:

1. If construction involves replacement of non-standard casings, the existing lid shall be salvaged and returned to the COB Corporation Yard.

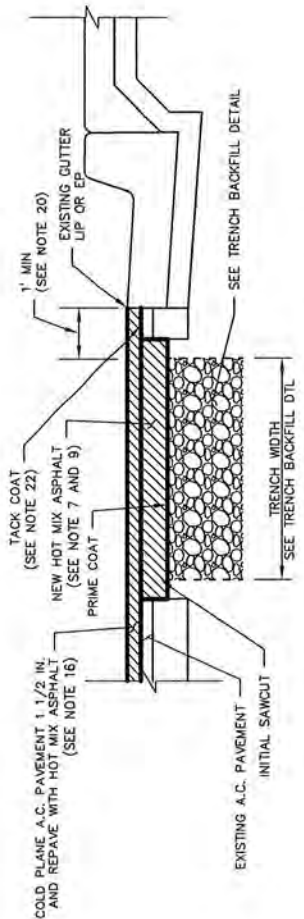


NOTE: This Drawing Supersedes COB Plan 7987, File: 20 B-150 MCT-12/2013

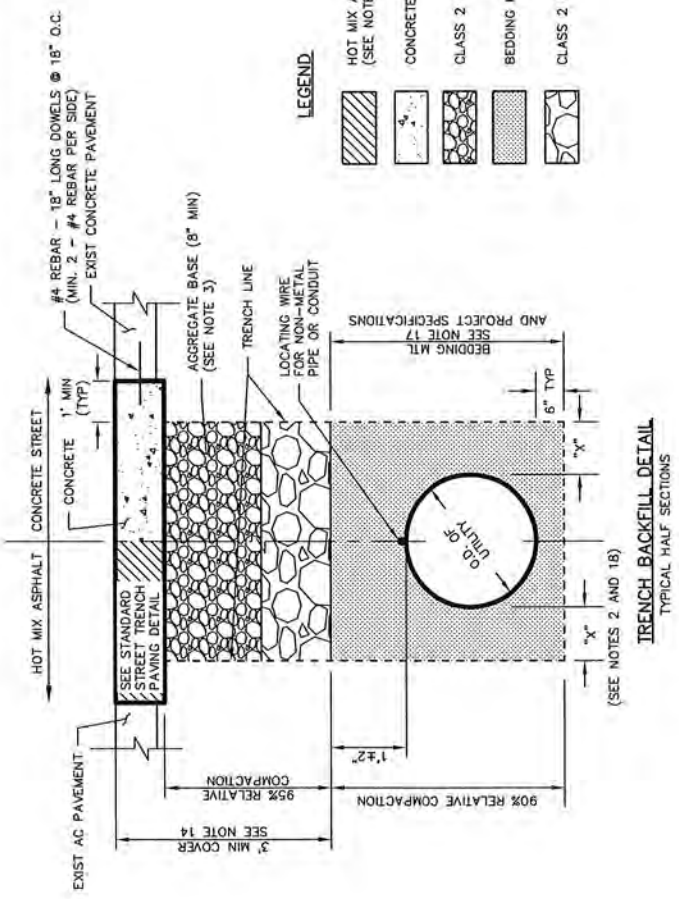
<p>1 DOME BRASS MARKER TO BE FURNISHED BY THE CITY</p>		<p>DATE: 11/2010</p>
<p>2 REVISED DETAIL TO INCLUDE NEW STANDARD CHRISTY® G05T BOX & LID</p>		<p>DATE: 12/2013</p>
<p>3 UPDATE STANDARD SETTING AND REVISED TITLE BLOCK</p>		<p>DATE: 12/2015</p>
<p>DESIGN: EC/MCT</p>	<p>DATE: 12/2015</p>	<p>PLAN: 8091</p>
<p>DRAWN: EC/MCT</p>	<p>SCALE: N.T.S.</p>	<p>FILE: 20-B-154</p>
<p>CHECK: SRR</p>		
<p>APPROVED: <i>Sean R. Rose</i></p>		<p>CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL</p>
<p>CITY ENGINEER</p>	<p>DATE: 12/23/15</p>	
<p>CITY MONUMENT REHAB IN NEW SIDEWALK OR DRIVEWAY</p>		



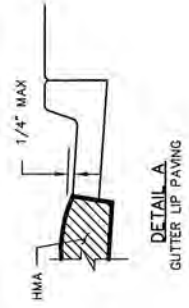
STANDARD STREET TRENCH PAVING DETAIL



MORATORIUM STREET TRENCH PAVING DETAIL
(SEE NOTE 13 AND 16 FOR MORATORIUM STREETS)



TRENCH BACKFILL DETAIL
TYPICAL HALF SECTIONS



DETAIL A
GUTTER LIP PAVING

LEGEND

- HOT MIX ASPHALT (HMA) PAVING (SEE NOTE 9)
- CONCRETE PAVEMENT
- CLASS 2 AGGREGATE BASE (AB)
- BEDDING MATERIAL (SEE NOTE 17)
- CLASS 2 AGGREGATE BASE (AB)

STANDARD DETAIL
TRENCH EXCAVATION AND
SURFACE RESTORATION

SUBMITTED: *[Signature]*
SUPERVISING CIVIL ENGINEER
APPROVED: *[Signature]*
MANAGER OF ENGINEERING

DATE: 7/6/16
R.C.E. 64582
DATE: 7/6/16
R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS
DESIGN: HEI
DRAWN: HEI
CHECK: _____
DATE: 06/2016
SCALE: _____
BOOK: _____
PLAN: 8136
FILE: 20-B-155
SHEET: 1 OF 2

NOTES:

1. TRENCH EXCAVATION IN THE PUBLIC RIGHT OF WAY SHALL CONFORM TO THE CITY OF BERKELEY GENERAL REGULATIONS FOR TRENCH EXCAVATION AND SURFACE RESTORATION IN THE PUBLIC RIGHT OF WAY. CUT THROUGH THE FULL DEPTH OF EXISTING SURFACING TO A NEAT STRAIGHT LINE AT LEAST 1.0 FOOT OUTSIDE THE TRENCH LINE. RECUT PAVEMENT EDGES DAMAGED DURING CONSTRUCTION TO NEAT LINES PRIOR TO PAVING. APPLY PAINT BINDER (TACK COAT) TO ALL VERTICAL SURFACES IN ACCORDANCE WITH THE LATEST EDITION OF CALTRANS STANDARD SPECIFICATIONS.
2. MINIMUM WIDTH OF TRENCH SHALL BE IN ACCORDANCE WITH THE DIMENSION SHOWN ON THE TRENCH BACKFILL DETAIL. DIMENSIONS "X" IS SHOWN BELOW FOR THE UTILITY "O.D."

UTILITY O.D.	"X" MIN
UNDER 1.0'	0.5'
1.0' TO 4.5'	1.0'
OVER 4.5'	2.0'
3. CLASS 2 AGGREGATE BASE (AB) SHALL BE INSTALLED IMMEDIATELY BELOW THE PAVEMENT SECTION TO BE REPLACED. THE AB QUALITY, GRADATION AND THE METHOD OF INSTALLATION SHALL BE IN CONFORMANCE WITH SECTION 26 OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION. THE DEPTH OF THE AB SHALL BE IN ACCORDANCE WITH THE TRENCH BACKFILL DETAIL. 95% RELATIVE COMPACTION IS REQUIRED.
4. RELATIVE COMPACTION SHALL BE DETERMINED BY CALIFORNIA TEST NUMBER 231 (NUCLEAR GAUGE) OR APPROVED EQUAL. PERMITTEE SHALL ARRANGE AND PAY FOR THE TEST FOR RELATIVE COMPACTION WHEN ORDERED BY THE ENGINEER. THE TEST SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING LABORATORY AND TEST RESULTS BE SUBMITTED TO ENGINEERING FORTY-EIGHT (48) HOURS IN ADVANCE OF PERMANENT PAVING OPERATION.
5. PERMITTEE SHALL PLACE TEMPORARY BITUMINOUS RESURFACING TWO (2) INCHES IN THICKNESS OVER THE COMPACTED BACKFILL AREAS. GREATER THICKNESS MAY BE REQUIRED FOR MAJOR INTERSECTIONS AND OTHER CRITICAL AREAS BY THE ENGINEER AS NECESSARY. STEEL PLATES MAY BE USED AS AN ALTERNATIVE IF APPROVED BY ENGINEER.
6. TEMPORARY BITUMINOUS RESURFACING (CUT-BACK) SHALL BE MECHANICALLY COMPACTED IN PLACE TO A UNIFORM, EVEN SURFACE AND SHALL BE TRUE TO STREET GRADE AND CROSS SECTION. THE PERMITTEE SHALL REGULARLY INSPECT AND MAINTAIN THE TEMPORARY BITUMINOUS RESURFACING UNTIL THE EXCAVATION IS PERMANENTLY PAVED. THE SURFACING SHALL NOT VARY TO MORE THAN 1/2" FROM THE EDGE OF A 10 FOOT STRAIGHT EDGE. UPON NOTIFICATION, THE PERMITTEE SHALL CORRECT THE SURFACE DEFICIENCY WITHIN 48 HOURS. LOOSE ROCKS AND OTHER DEBRIS GENERATED FROM TEMPORARY RESURFACING OPERATIONS SHALL BE IMMEDIATELY REMOVED FROM THE WORKSITE.
7. TEMPORARY BITUMINOUS RESURFACING SHALL BE REMOVED BEFORE PLACEMENT OF FINAL PAVING. FINAL PAVING SHALL BE MINIMUM FIVE (5) INCHES THICK OR SAME AS THE EXISTING PAVEMENT, WHICHEVER IS GREATER. THE PAVEMENT SHALL BE PLACED ON UNDISTURBED PREVIOUSLY COMPACTED BACKFILL AREAS.
8. PAVEMENT OUTSIDE OF THE FINAL CUT LINE DAMAGED BY THE PERMITTEE'S OPERATIONS SHALL BE REMOVED BY SAW-CUTTING IN LINES PERPENDICULAR OR PARALLEL TO THE ORIGINAL TRENCH LINES. NO DIAGONAL CUTS WILL BE PERMITTED.
9. HOT MIX ASPHALT (HMA) SHALL BE TYPE A IN CONFORMANCE WITH SECTION 39 OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS, UNLESS OTHER WISE SPECIFIED IN THE ENCROACHMENT PERMIT CONDITIONS OR AS DIRECTED BY THE PUBLIC WORKS DEPARTMENT. HMA SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
10. THE TOP 1 1/2" OF HMA SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1/2" UNLESS OTHERWISE SPECIFIED. THE HMA BENEATH THE TOP LAYER SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 3/4".
11. UPON COMPLETION OF PAVING OPERATIONS THE PERMITTEE SHALL IMMEDIATELY REPLACE ALL PAVEMENT MARKING AND TRAFFIC STRIPING DAMAGED OR REMOVED BY HIS OPERATIONS. PAVEMENT MARKINGS AND TRAFFIC STRIPINGS SHALL BE REPLACED IN KIND OR WITH SUBSTITUTE MATERIAL APPROVED BY THE ENGINEER.
12. WHEN ANY PORTION OF THE CURB AT A LEGAL PEDESTRIAN CROSSWALK OR ANY PORTION OF THE SIDEWALK IN IMMEDIATE CONTACT WITH SUCH CURB IS REMOVED BY THE PERMITTEE OPERATIONS, THE PERMITTEE SHALL CONSTRUCT, AS PART OF HIS REPLACEMENT OPERATIONS, A CURB RAMP AS SHOWN IN CITY OF BERKELEY STANDARD DETAIL NO. 6780.
13. EXCAVATION ON STREETS RECONSTRUCTED OR RESURFACED WITHIN THE LAST 5 YEARS WILL NOT BE PERMITTED EXCEPT FOR CONDITIONS ENUMERATED IN THE CITY OF BERKELEY GENERAL REGULATIONS AND FOR TRENCH EXCAVATION AND SURFACE RESTORATION IN THE PUBLIC RIGHT OF WAY.
14. MINIMUM COVER OVER UTILITIES IS GOVERNED BY THE CALIFORNIA PUBLIC UTILITIES COMMISSION. UTILITY OWNERS SHALL CONSIDER PLACING THEIR UTILITY LINE AT A GREATER DEPTH TO AVOID FUTURE RELOCATION DUE TO STREET/ROAD RECONSTRUCTION. THE INCREASED DEPTH SHOULD INCLUDE SUFFICIENT CLEARANCE BETWEEN THE UTILITY AND PAVEMENT STRUCTURAL SECTION UPGRADE TO PREVENT DAMAGE BY CONSTRUCTION EQUIPMENT. THE PUBLIC WORKS DEPARTMENT RECOMMENDS A MINIMUM OF 36 INCHES OF COVER BELOW THE PAVEMENT SURFACE IN ROADWAYS AND 24 INCHES BELOW FINISH GRADE IN SIDEWALKS AND OTHER PUBLIC RIGHT OF WAY.
15. RESTORATION OF THE TRENCH EXCAVATION ON CALTRANS RIGHT OF WAY (SAN PABLO AVE., ASHBY AVE., AND TUNNEL RD.) SHALL BE IN ACCORDANCE WITH CALTRANS ENCROACHMENT PERMIT.
16. RESTORE PAVEMENT AS FOLLOWS: FOR TRENCHES PARALLEL WITH THE CENTERLINE OF THE STREET, COLD PLANE AND REPAVE THE LANE IN WHICH THE TRENCH LIES. FOR TRANSVERSE TRENCHES, COLD PLANE AND REPAVE 1/2 LANE WIDTH ON EACH SIDE OF THE TRENCH. FOR BELL HOLES, COLD GRIND AND PAVE 1 LANE WIDTH ON EACH SIDE OF THE EXCAVATION. PRIOR TO COLD PLANING, THE TRENCH SHALL BE PAVED IN 3 INCH MAXIMUM LIFTS TO THE ORIGINAL SURFACE GRADES OR TO WITHIN 1 1/2 INCHES OF THE EXISTING SURFACE. IF THE CONTRACTOR ELECTS TO PAVE WITHIN 1 1/2 INCHES OF THE EXISTING SURFACE, THE REMAINING 1 1/2 INCHES MUST BE PAVED WITH CUT BACK ASPHALT UNTIL THE SURFACE IS PLANED. FINAL PAVING SHALL COMMENCE WITHIN 3 DAYS AFTER COLD GRINDING. ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE AREA TO BE REPAVED PRIOR TO REPAVING.
17. BEDDING MATERIAL SHALL BE CLASS 2 AB OR CRUSHED ROCK PER 2015 GREENBOOK, TABLE 200-1.2.1(A), 3/4" SIEVE SIZE. ALTERNATIVE MATERIALS SHALL BE APPROVED BY THE PUBLIC WORKS DEPARTMENT. IN NO CASE SHALL "PEA" GRAVEL BE ALLOWED. A MAXIMUM OF 6 INCHES OF SAND MAY BE USED AS A BEDDING MATERIAL FOR COMMUNICATION, GAS AND ELECTRIC CONDUITS ONLY.
18. FOR GAS, ELECTRIC AND COMMUNICATION CONDUITS WITH AN OUTSIDE DIAMETER EQUAL TO OR LESS THAN 4 INCHES, THE TRENCH WIDTH MAY BE REDUCED TO NO LESS THAN 12 INCHES.
19. UNSUITABLE NATIVE MATERIAL SHALL BE EXCAVATED BELOW THE LIMIT OF EXCAVATION AND REPLACED WITH SUITABLE BACKFILL MATERIAL WHEN DIRECTED BY THE PUBLIC WORKS DEPARTMENT.
20. WHERE THE TRENCH PARALLELS CURB AND THE NEAREST TRENCH LINE IS LESS THAN 3 FEET FROM THE GUTTER LIP, ALL EXISTING HMA SHALL BE REPLACED TO THE GUTTER LIP.
21. SLURRY CEMENT BACKFILL SHALL COMPLY WITH SECTION 19-3.02E OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS.
22. APPLY PAINT BINDER (TACK COAT) TO ALL EXISTING AC AND CONCRETE SURFACES IN ACCORDANCE WITH THE LATEST EDITION OF CALIFORNIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS.

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL
TRENCH EXCAVATION AND
SURFACE RESTORATION

SUBMITTED: _____ DATE: 7/6/16
 _____ R.C.E. 64582
 SUPERVISING CIVIL ENGINEER

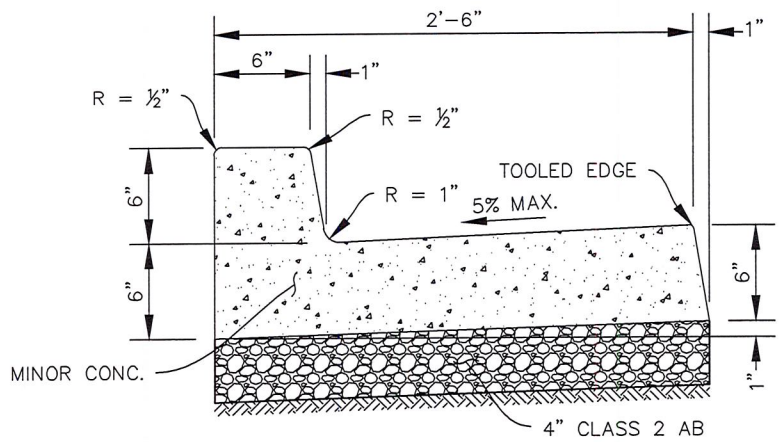
APPROVED: _____ DATE: 7/6/16
 _____ R.C.E. 66014
 MANAGER OF ENGINEERING

DESIGN: <u>HEI</u>	DATE: <u>06/2016</u>	PLAN: <u>8136</u>
DRAWN: <u>HEI</u>	SCALE: _____	FILE: <u>20-B-155</u>
CHECK: _____	BOOK: _____	SHEET: <u>2 OF 2</u>

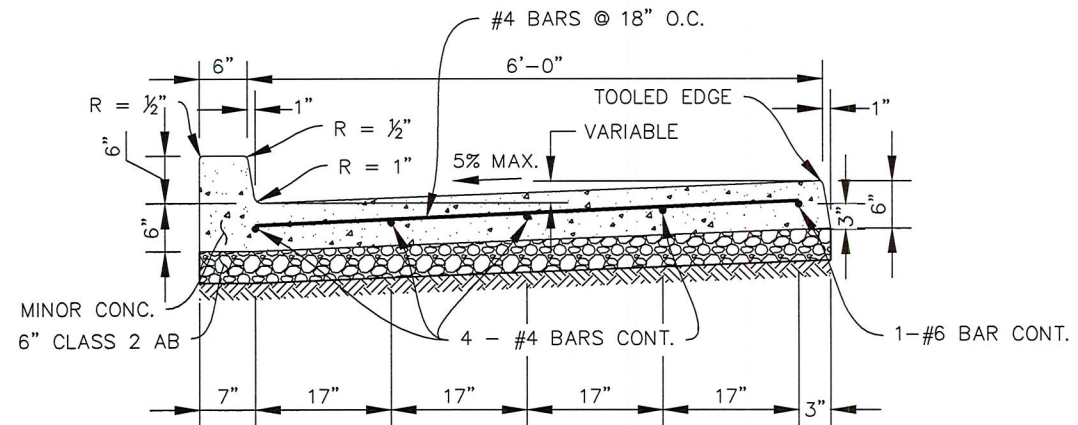
GENERAL NOTES FOR CONCRETE FLAT WORK

1. CURB RAMPS SHALL CONFORM TO THE LATEST EDITION AND REVISED STANDARD PLAN (RSP) OF THE (CALIFORNIA DEPARTMENT OF TRANSPORTATION) STANDARD SPECIFICATIONS AND STANDARD PLAN A88A AND A88B.
2. PORTLAND CEMENT CONCRETE FOR SIDEWALK, CURB, DRIVEWAY, GUTTER AND VALLEY GUTTER SHALL BE MINOR CONCRETE CONFORMING TO THE REQUIREMENTS OF SECTION 90-2 "MINOR CONCRETE" OF THE (CALIFORNIA DEPARTMENT OF TRANSPORTATION) STANDARD SPECIFICATIONS. NO BAGGED MIX IS PERMITTED.
3. BUS PAD CONCRETE SHALL BE DESIGNED WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AND SHALL BE SAMPLED (3 CYLINDERS REQ'D) AND TESTED.
4. EXISTING SUBGRADE SURFACE SHALL BE RE-GRADED (IF NECESSARY) AND RE-COMPACTED (MIN 95% RELATIVE COMPACTION) TO CONFORM TO THE GRADES SHOWN ON THE PLANS.
5. NEW CONCRETE WORK SHALL MATCH EXISTING IN FINISH, SCORE PATTERN, AND COLOR, OR AS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
 - a) ROSE COLORED CONCRETE SHALL CONTAIN 6 POUNDS OF DAVIS #160 (ROSE) PER CUBIC YARD.
 - b) ALL OTHER CONCRETE SHALL CONTAIN 1.5 POUND OF LAMPBLACK PER CUBIC YARD.
6. NO ADMIXTURES SHALL BE USED WITHOUT APPROVAL OF THE ENGINEER.
7. CURBS, SIDEWALKS, DRIVEWAYS, AND CURB RAMPS SHALL HAVE FORMS REMOVED AND BE BACKFILLED WITHIN 3 DAYS AFTER PLACING CONCRETE. CONCRETE SHALL BE ALLOWED TO CURE FOR AT LEAST 48 HOURS PRIOR TO BACKFILLING.
8. MAXIMUM SLUMP OF FRESH CONCRETE PERMITTED IN THESE ITEMS SHALL BE 4 INCHES. SLUMP SHALL BE DETERMINED BY EITHER ASTM C-143 OR CALIFORNIA TEST METHOD NO. 520 AT THE ENGINEER'S DISCRETION. CONCRETE SHALL BE TRANSPORTED IN TRUCK MIXERS OR AGITATORS AND DISCHARGED WITHIN 70 MINUTES OF LEAVING THE PLANT.
9. WEAKENED PLANE JOINTS AT LEAST 1-1/2 INCHES DEEP AND 1/8 INCHES WIDE SHALL BE PLACED AT 10 FEET MAXIMUM SPACING.
10. EXPANSION JOINT FILLER FOR CONCRETE (BITUMINOUS TYPE) MUST BE IN COMPLIANCE WITH ASTM D 994.
11. ALL NEW CURB, SIDEWALK, VALLEY GUTTER AND DRIVEWAYS CONSTRUCTED ADJACENT TO EXISTING CONCRETE CURB OR SIDEWALK SHALL BE DOWELLED TO THE EXISTING CONCRETE. THE DOWELS SHALL BE #4 REBAR, 18 INCHES LONG AT 18 INCHES MAXIMUM SPACING. DOWELS SHALL BE EMBEDDED A MINIMUM OF 8-INCHES IN A 5/8 INCH DRILLED HOLE (EXIST. CONC.).
12. SIDEWALK SHALL BE CONSTRUCTED WITH EXPANSION JOINTS AT EACH BEGINNING OF CURVE (BC) AND END OF CURVE (EC).
13. CURB AND GUTTER, SIDEWALKS AND DRIVEWAYS SHALL BE GIVEN A MEDIAN BROOM FINISH. THE SURFACE SHALL FIRST BE GIVEN A FLOATED FINISH AND FINAL TROWELING SHALL BE DONE WITH A STEEL TROWEL. THE FINISHED SURFACE SHALL BE FREE OF ALL TROWEL MARKS AND SHALL BE UNIFORM IN TEXTURE AND APPEARANCE, BROOM TEXTURE SHALL BE IN THE LONGITUDINAL DIRECTION.
14. CLASS 2 AGGREGATE BASE (CL 2 AB) SHALL CONFORM TO THE CALTRANS STANDARD SPECIFICATIONS (LATEST EDITION) AND SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% RELATIVE COMPACTION.
15. EXISTING ASPHALT CONCRETE SHALL BE SAWCUT, REMOVED AND RECONSTRUCTED FOR A MINIMUM OF 2- FEET WITHIN EDGES OF CONCRETE WORK. HOT MIX ASPHALT SHALL BE A MINIMUM THICKNESS OF 8" AND CL 2 AB SHALL MATCH EXISTING THICKNESS. AS APPROVED BY THE CITY ENGINEER. SEE PLAN 8148 "CURB AND GUTTER RETROFIT" FOR ADDITIONAL REQUIREMENTS.

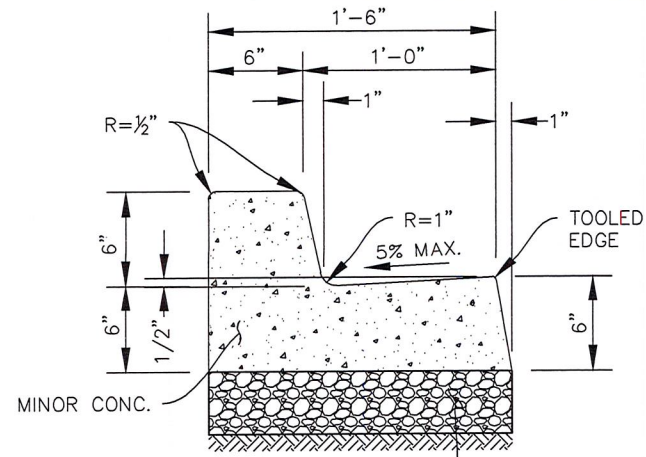
CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS		STANDARD DETAIL CONCRETE WORK NOTES		
SUBMITTED: _____ SUPERVISING CIVIL ENGINEER	DATE: <u>2/27/17</u> R.C.E. <u>64582</u>			
APPROVED: _____ MANAGER OF ENGINEERING	DATE: <u>2/28/17</u> R.C.E. <u>66014</u>	DESIGN: <u>HEI</u> DRAWN: <u>HEI</u> CHECK: <u>MS</u>	DATE: <u>01/26/17</u> SCALE: <u>N.T.S.</u> BOOK: _____	PLAN: <u>8144</u> FILE: <u>20B-156</u> SHEET: <u>1 OF 1</u>



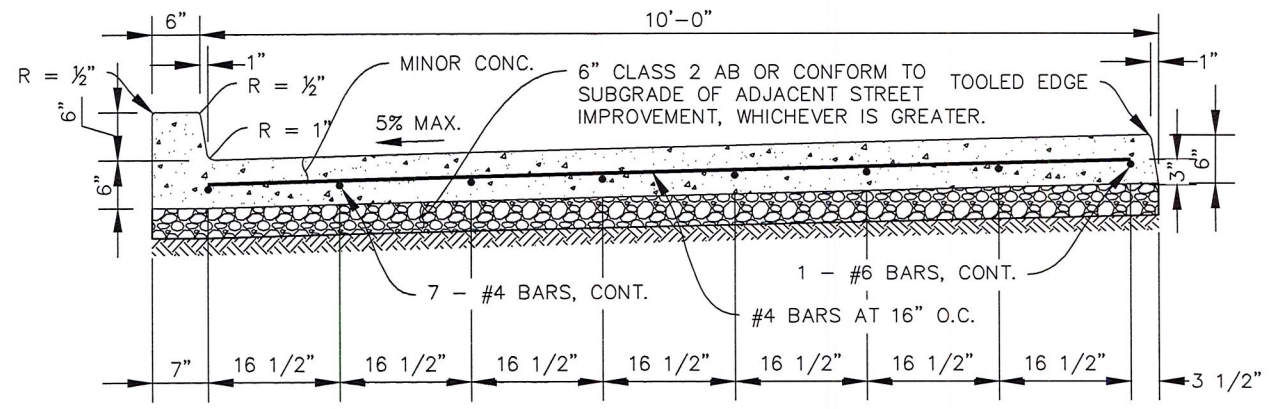
STANDARD CURB AND GUTTER DETAIL



CURB AND 6 FOOT GUTTER DETAIL



CURB AND 1 FOOT GUTTER DETAIL



CURB AND 10 FOOT GUTTER DETAIL

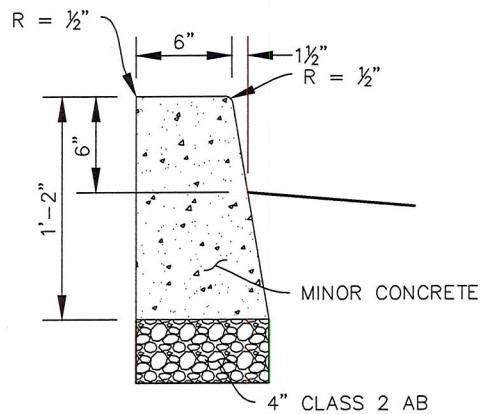
NOTE:
1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

STANDARD DETAIL
CURB AND GUTTER

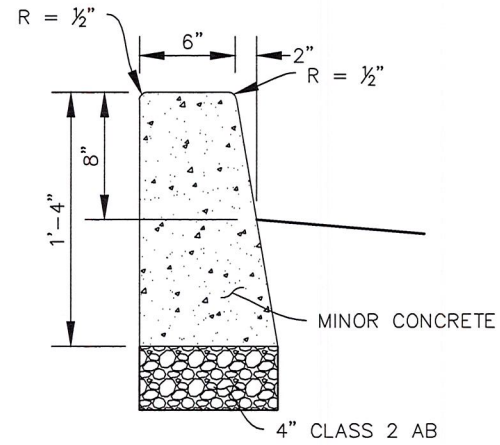
SUBMITTED: <i>Don Zrby</i> SUPERVISING CIVIL ENGINEER	DATE: <u>2/27/17</u> R.C.E. <u>64582</u>
APPROVED: <i>R. J. [Signature]</i> MANAGER OF ENGINEERING	DATE: <u>2/28/17</u> R.C.E. <u>66014</u>

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8145</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-157</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>



STANDARD 6" VERTICAL CURB DETAIL



STANDARD 8" VERTICAL CURB DETAIL

NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

STANDARD DETAIL
VERTICAL CONCRETE CURB

SUBMITTED:
Dan Zrby
SUPERVISING CIVIL ENGINEER

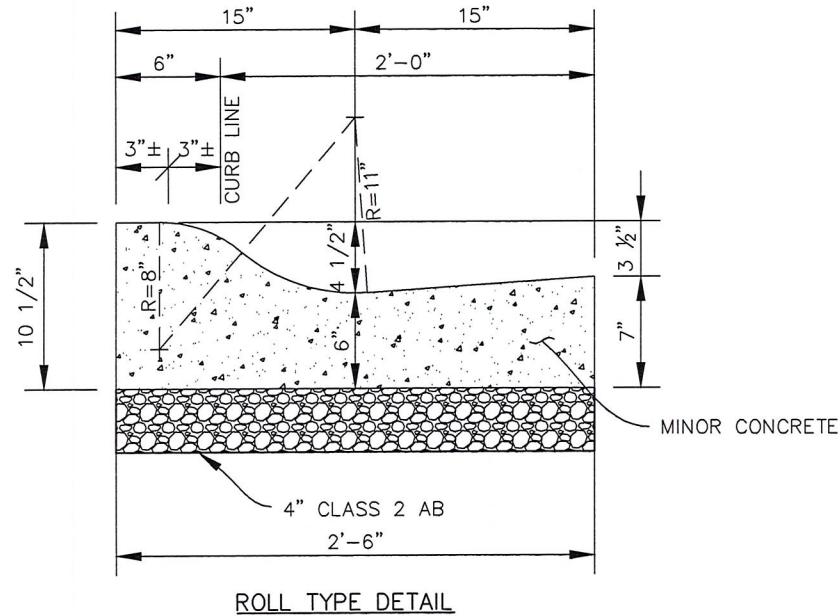
APPROVED:
[Signature]
MANAGER OF ENGINEERING

DATE: 2/27/17
R.C.E. 64582

DATE: 2/28/17
R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

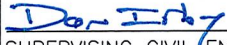
DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8146</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-158</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>




NOTE:

1. TO BE USED ONLY WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.
2. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

**STANDARD DETAIL
ROLLED CURB**

SUBMITTED:

 SUPERVISING CIVIL ENGINEER

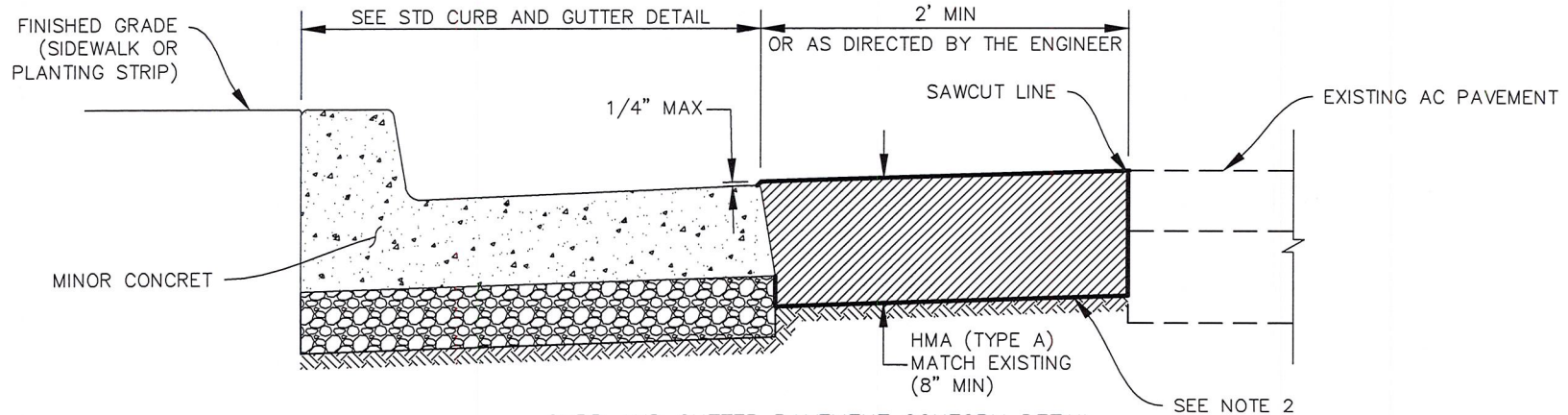
APPROVED:

 MANAGER OF ENGINEERING

DATE: 2/27/17
 R.C.E. 64582

DATE: 2/28/17
 R.C.E. 66014

CITY OF BERKELEY
 DEPARTMENT OF PUBLIC WORKS

DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8147</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-159</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>



CURB AND GUTTER PAVEMENT CONFORM DETAIL

NOTES:

1. PAVEMENT CONFORM SHALL BE PAVED IN 2 INCH MAXIMUM LIFTS.
2. APPLY ASPHALTIC EMULSION PAINT BINDER (TACK COAT) TO ALL EXISTING AC AND CONCRETE SURFACES IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS.
3. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

**STANDARD DETAIL
CURB AND GUTTER RETROFIT**

SUBMITTED: Don Kirby
SUPERVISING CIVIL ENGINEER

APPROVED: [Signature]
MANAGER OF ENGINEERING

DATE: 2/27/17

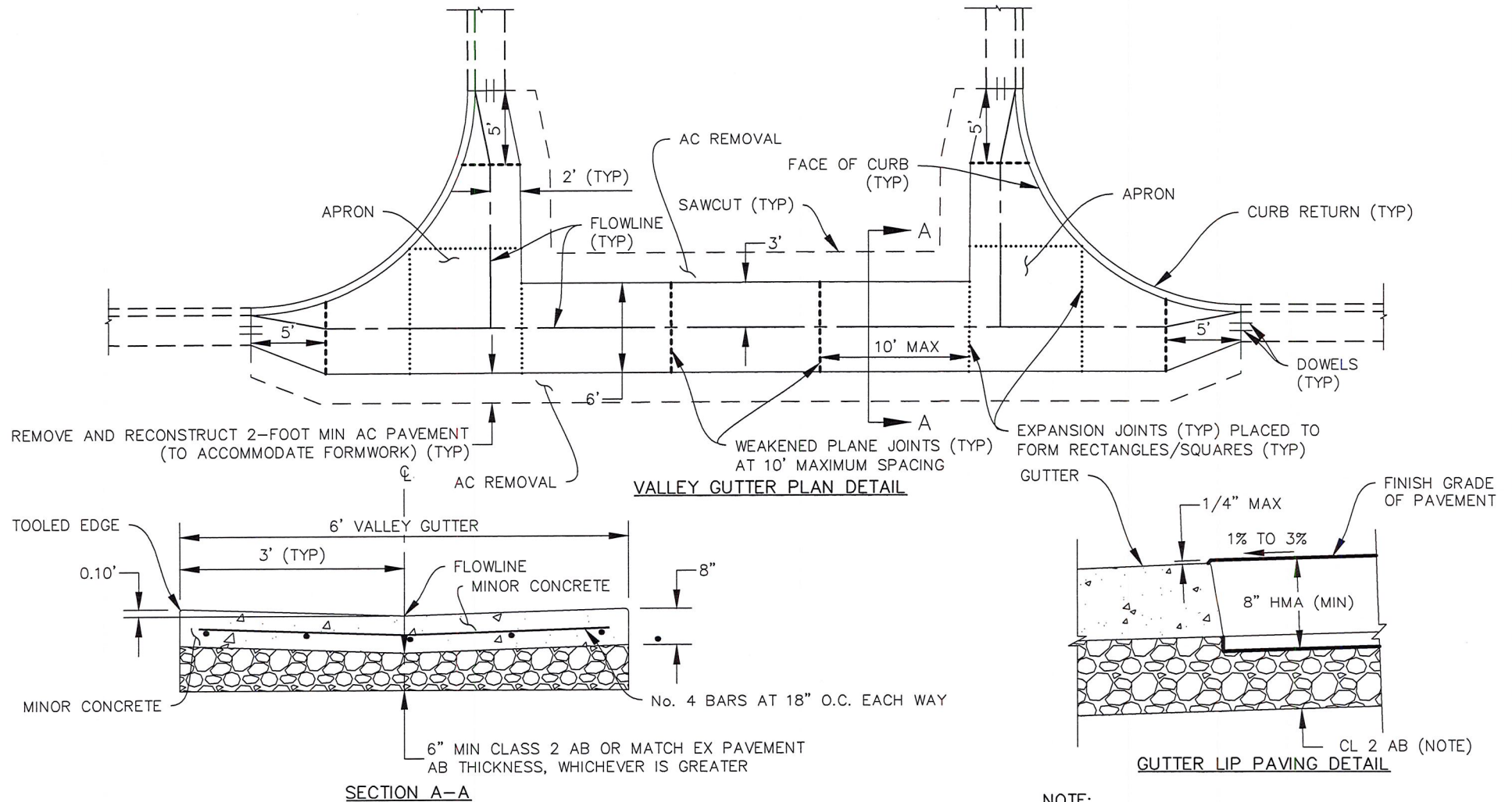
R.C.E. 64582

DATE: 2/28/17

R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8148</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-160</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>



NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

NOTE:

1. PAVEMENT SECTION SHALL BE AS APPROVED BY THE CITY ENGINEER. LAYERS SHALL NOT BE LESS THAN THE EXISTING THICKNESS.

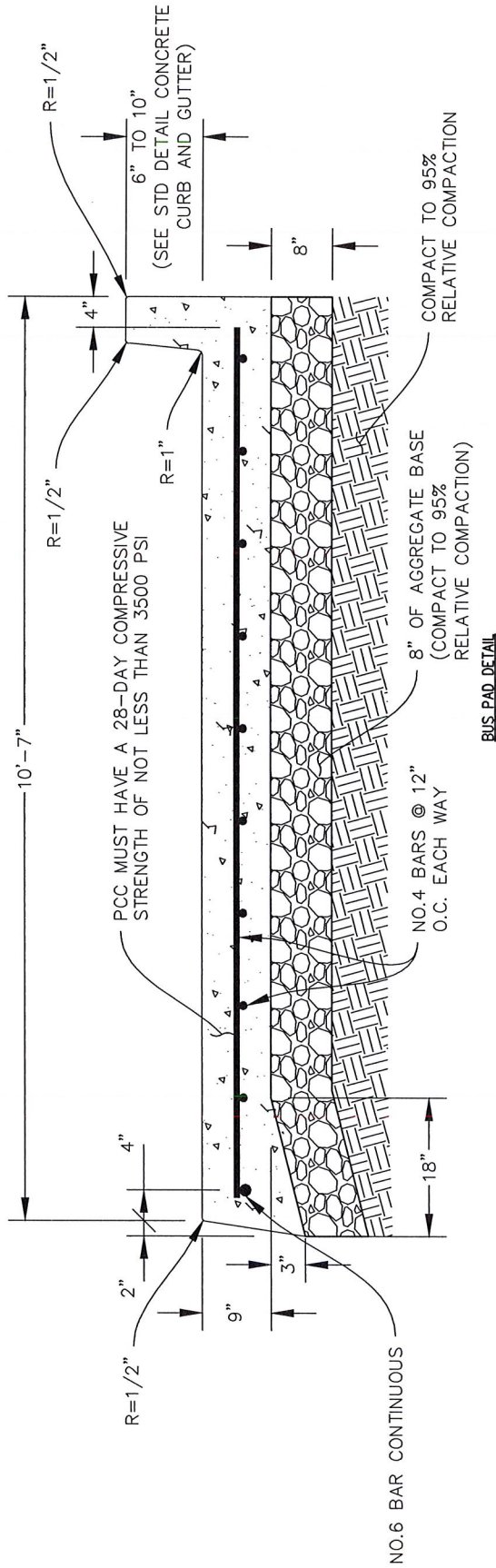
**STANDARD DETAIL
VALLEY GUTTER**

SUBMITTED: Don Derby
SUPERVISING CIVIL ENGINEER
APPROVED: D-L-O
MANAGER OF ENGINEERING

DATE: 2/27/17
R.C.E. 64582
DATE: 2/28/17
R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8149</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-161</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>



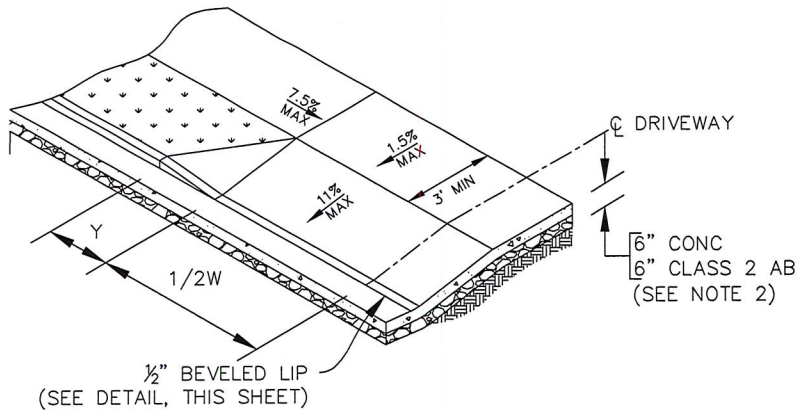
NOTES:

1. ALL FREE EDGES OF BUS PAD TO BE THICKENED AND REINFORCED WITH A #6 BAR.
2. ALL EXPOSED PCC CORNERS SHALL BE ROUNDED A 1/2" RADIUS.
3. CONSTRUCT TRANSVERSE WEAKENED-PLANE JOINTS IN BUS PAD PAVEMENT AT APPROXIMATELY 10' INTERVALS.
4. CONSTRUCT TRANSVERSE WEAKENED-PLANE JOINTS IN BUS PAD PAVEMENT AT ALL EXISTING CURB, CURB AND GUTTER CONSTRUCTION JOINTS AND WEAKENED-PLANE JOINTS.
5. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

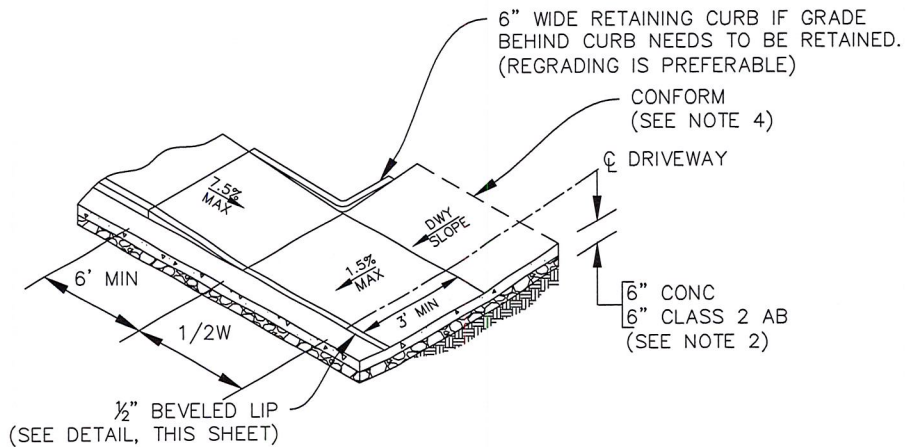
**STANDARD DETAIL
BUS PAD**

SUBMITTED:	DATE: <u>2/27/17</u>
<i>Don Zerbby</i> SUPERVISING CIVIL ENGINEER	R.C.E.: <u>64582</u>
APPROVED:	DATE: <u>2/28/17</u>
<i>[Signature]</i> MANAGER OF ENGINEERING	R.C.E.: <u>66014</u>

CITY OF BERKELEY		DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8150</u>
DEPARTMENT OF PUBLIC WORKS		DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-162</u>
		CHECK: <u>MS</u>	BOOK:	SHEET: <u>1 OF 1</u>



DRIVEWAY WITH SEPARATED SIDEWALK
 W=DRIVEWAY WIDTH (SEPARATED SIDEWALK)



DRIVEWAY WITH MONOLITHIC SIDEWALK
 W=DRIVEWAY WIDTH (MONOLITHIC SIDEWALK)

NOTES:

- REFER TO GENERAL NOTES FOR CONCRETE WORK.
- RESIDENTIAL DRIVEWAYS SHALL BE 6 INCHES THICK PORTLAND CEMENT CONCRETE (PCC). COMMERCIAL AND INDUSTRIAL DRIVEWAYS SHALL BE 6 INCHES THICK REINFORCED CONCRETE. REINFORCEMENT SHALL BE 6"X6" WELDED WIRE FABRIC, #10 GAUGE MESH OR #4 BARS AT 18 INCH O.C. EACH WAY. THE REQUIRED STRUCTURAL SECTION FOR ANY DRIVEWAY SHALL BE CONTINUOUS FROM THE CURB TO THE BACK OF SIDEWALK.
- DEPTH OF GUTTER FLOWS SHALL BE CALCULATED AND COMPARED TO PROPOSED SIDEWALK ELEVATIONS DURING DESIGN TO ENSURE GUTTER FLOWS ARE CONTAINED AND RUNOFF WITHIN THE PUBLIC RIGHT OF WAY DOES NOT DRAIN ONTO PRIVATE PROPERTY.
- RETAINING CURBS AND DRIVEWAY CONFORMS AS REQUIRED.
- FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

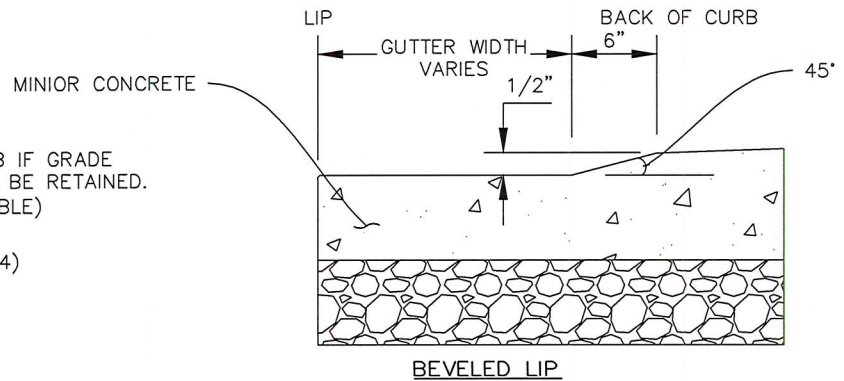


TABLE OF DRIVEWAY DIMENSIONS		
Dimension	Commercial & Industrial	Residential
Y	5' MIN	2' MIN
W	12' MIN	8' MIN

**STANDARD DETAIL
 DRIVEWAY**

SUBMITTED:
Don Zib
 SUPERVISING CIVIL ENGINEER

APPROVES:
P-LQ
 MANAGER OF ENGINEERING

DATE: 2/27/17
 R.C.E. 64582

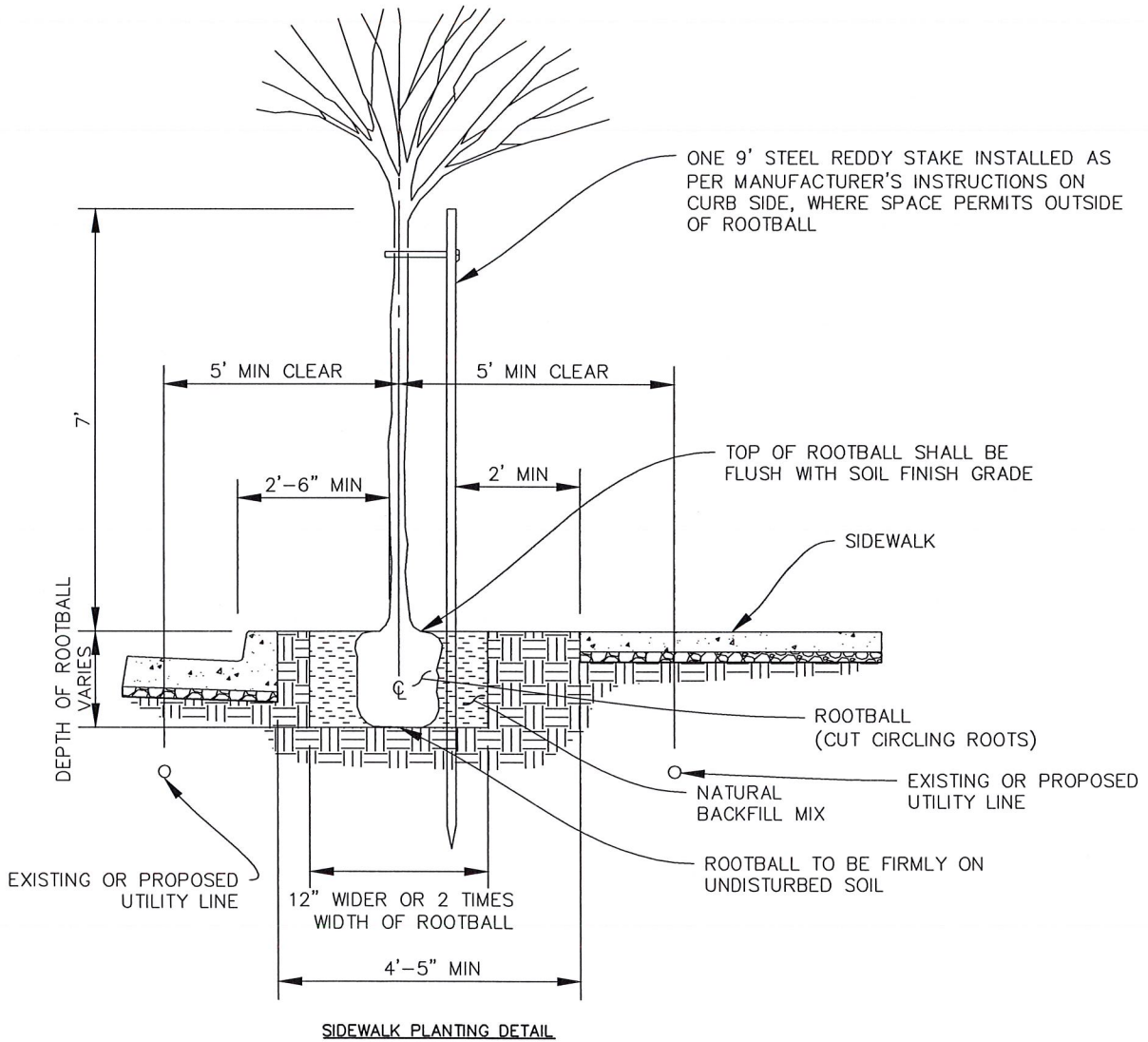
DATE: 2/28/17
 R.C.E. 66014

CITY OF BERKELEY
 DEPARTMENT OF PUBLIC WORKS

DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8151</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-163</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>

NOTE:

1. SPECIFIC TREE SPECIES SHALL BE APPROVED BY THE CITY OF BERKELEY'S MUNICIPAL URBAN FORESTRY UNIT.



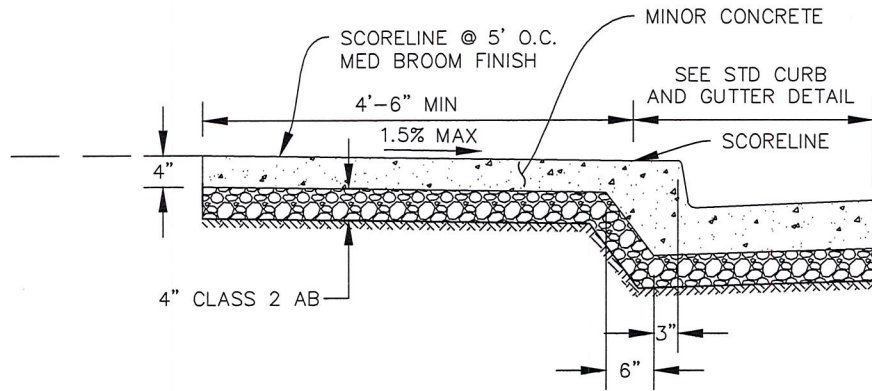
CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL
SIDEWALK PLANTING

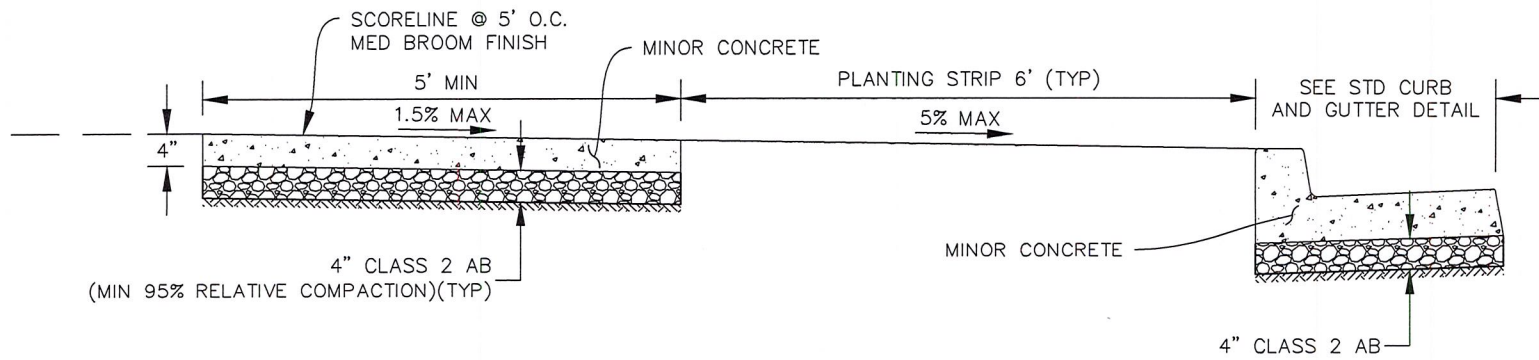
SUBMITTED: Don Zrby DATE: 2/27/17
 SUPERVISING CIVIL ENGINEER R.C.E. 64582

APPROVED: [Signature] DATE: 2/28/17
 MANAGER OF ENGINEERING R.C.E. 66014

DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8152</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-164</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>



STANDARD SIDEWALK DETAIL



STANDARD SIDEWALK WITH PLANTING STRIP DETAIL

NOTE:

1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

STANDARD DETAIL
SIDEWALK

SUBMITTED: Don Zrb
SUPERVISING CIVIL ENGINEER

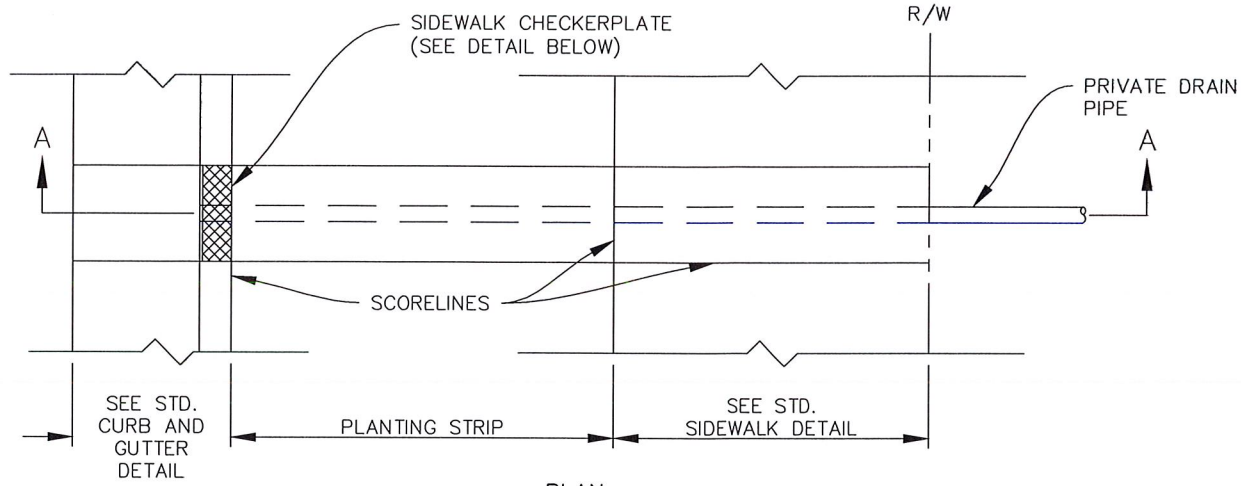
APPROVED: R-LO
MANAGER OF ENGINEERING

DATE: 2/27/17
R.C.E. 64502

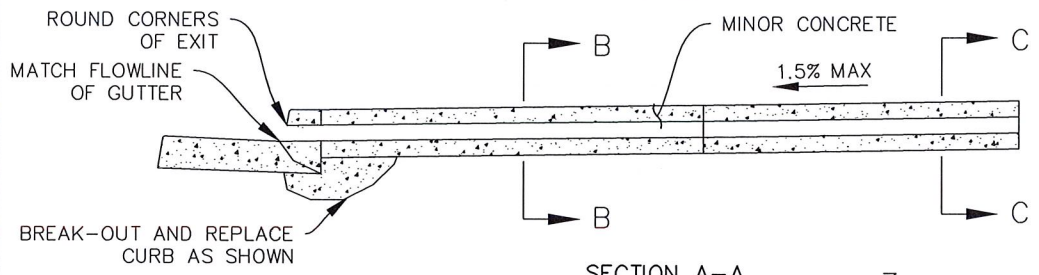
DATE: 2/28/17
R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

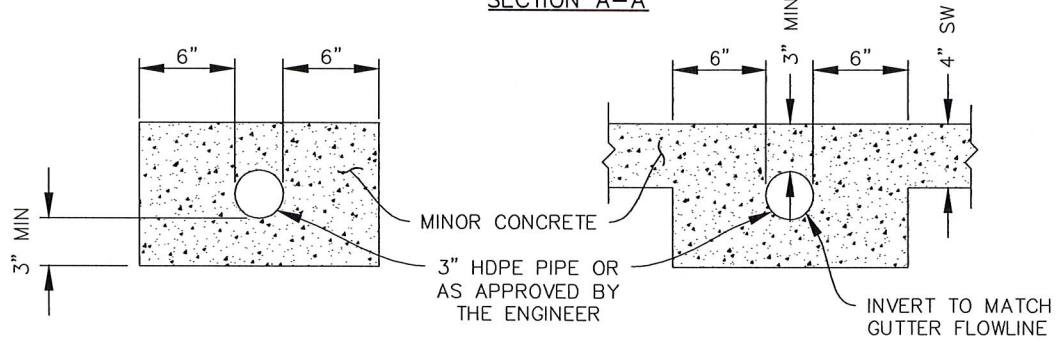
DESIGN: <u>HEI</u>	DATE: <u>01/26/17</u>	PLAN: <u>8153</u>
DRAWN: <u>HEI</u>	SCALE: <u>N.T.S.</u>	FILE: <u>20B-165</u>
CHECK: <u>MS</u>	BOOK: _____	SHEET: <u>1 OF 1</u>



PLAN

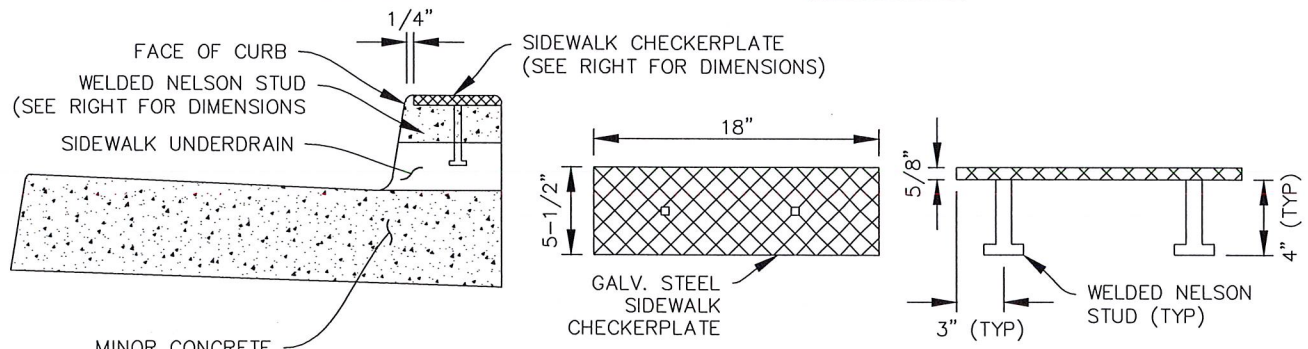


SECTION A-A



SECTION B-B

SECTION C-C



SIDEWALK UNDERDRAIN CHECKERPLATE SHALL BE GALVANIZED STEEL WITH AN EMBOSSED NONSKID PATTERN

SIDEWALK CHECKERPLATE DETAIL

NOTES:

- WHERE SIDEWALK UNDERDRAINS ARE INSTALLED AT LOCATIONS WHERE CURB, GUTTER, AND SIDEWALK IS EXISTING, REMOVE 24" OF CURB AND SIDEWALK SHALL BE SAWCUT AND REMOVED BETWEEN SCORELINES.
- MULTIPLE PARALLEL SIDEWALK UNDERDRAINS SHALL HAVE 4" CLEAR BETWEEN EDGE OF PIPES.
- FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

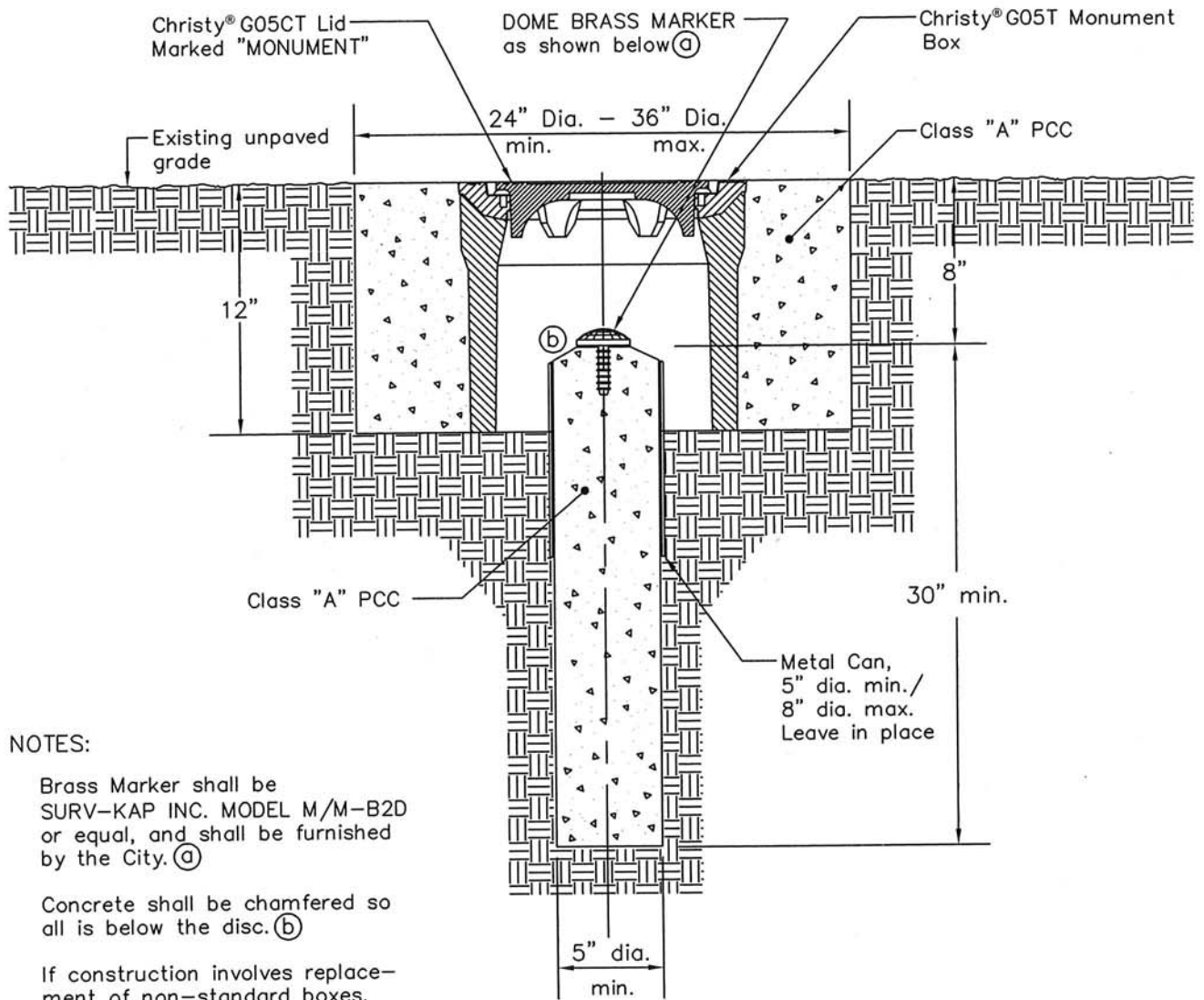
CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL
SIDEWALK UNDERDRAIN

SUBMITTED: Dou Derby DATE: 2/27/17
SUPERVISING CIVIL ENGINEER R.C.E. 64582

APPROVED: [Signature] DATE: 2/28/17
MANAGER OF ENGINEERING R.C.E. 66014

DESIGN: HEI	DATE: 01/26/17	PLAN: 8154
DRAWN: HEI	SCALE: N.T.S.	FILE: 20B-166
CHECK: MS	BOOK: _____	SHEET: 1 OF 1

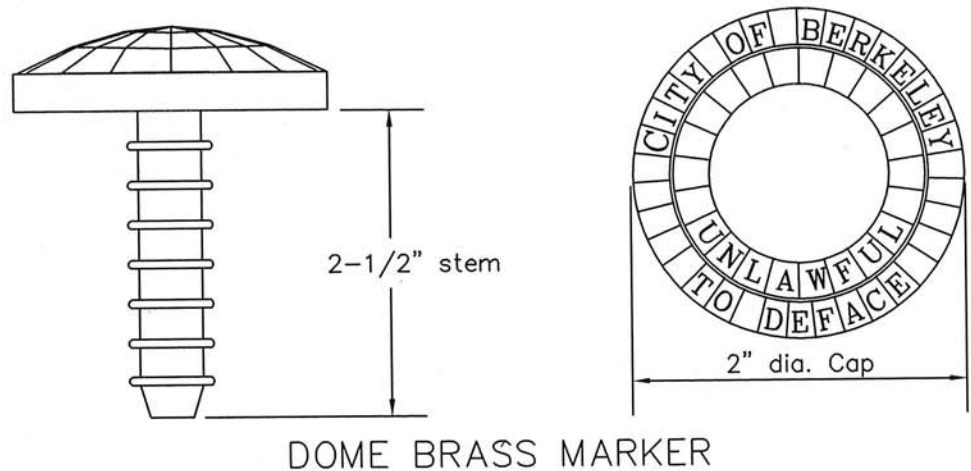


NOTES:

Brass Marker shall be SURV-KAP INC. MODEL M/M-B2D or equal, and shall be furnished by the City. (a)

Concrete shall be chamfered so all is below the disc. (b)

If construction involves replacement of non-standard boxes, the existing lid shall be salvaged and returned to the COB Corporation Yard.



DESIGN: MCT	DATE: 11/2017	PLAN: 8179
DRAWN: MCT	SCALE: N.T.S.	FILE: 20-B-167
CHECK: NAP		
APPROVED: <i>Nisha Patel</i>	11-17-17	
CITY ENGINEER	DATE:	

CITY OF BERKELEY
 DEPARTMENT OF PUBLIC WORKS
 STANDARD DETAIL
 CITY MONUMENT INSTALLATION
 IN UNPAVED SURFACE

CURBS, GUTTERS, SIDEWALKS, AND DRIVEWAY APPROACHES CONSTRUCTED
UNDER CITY PERMITS

DETAIL SPECIFICATIONS NO. 20A

2001 DESCRIPTION

2001.1A Construction between the lip of the gutter and the front property line under City permit and inspection shall be in conformity with these specifications, provided that with the approval of the Director of Public Works, special provisions attached to approved building plans, established good engineering practice, or special instructions given at the job site by the Engineering Inspector shall prevail when a conflict with these specifications is determined. Work not done according to these specifications, or work which undergoes failure at any time up to six months following installation when, in the judgment of the Director of Public Works said failure is the result of non-compliance with these specifications, shall be replaced by the permittee, or by the City at the permittee's expense.

2002 MATERIALS

2002.1A Portland Cement Concrete (hereinafter referred to as concrete) shall be five (5) sack, 1½" maximum aggregate and shall conform in all other particulars to City of Berkeley Detail Specification No. 50 or the current edition of Standard Specifications of the State of California of Transportation (hereinafter referred to as State Specs) except that the concrete whose slump exceeds 4" at the work site is prohibited in any case.

2002.2A Paving Brick and Paving Tile (pavers) shall have a surface which is sufficiently abrasive to insure pedestrian safety. A sample of the paver must be submitted to and approved by the Public Works Department prior to the start of construction.

2002.3A Cement Mortar shall consist of three (3) parts washed masonry sand, free of organic material, mixed with one (1) part of Portland cement. About ¼ part of lime or fire clay may be added if desired.

2002.4A Reinforcing Steel shall be ½" diameter (#4) deformed bars unless an alternate is specifically approved by the Engineering Inspector and shall conform to the current applicable State Specs.

2002.5A Concrete Additives other than 1½ pound of lampblack per cubic yard (required in concrete for standard finish sidewalks, widened sidewalks and driveways)

must be approved in advance by the Engineering Inspector. All additives, other than color additives, must be added at the batch plant. Rapid curing agents, such as NaCl or CaCl may not exceed 1% in any case and are strictly prohibited from concrete with reinforcing steel.

2002.6A Prohibited Material. The installation of any material other than standard finished concrete or soil in the area between the front property line and the curb is prohibited unless specifically authorized by the Director of Public Works or his representative.

2002.7A Untreated Base shall be granular, non-cohesive, well graded crusher run, $\frac{3}{4}$ " to $1\frac{1}{2}$ " maximum aggregate. Bay sand, quarry wastes, or other suitable material may be used in place of crusher run if approved by the Engineering Inspector.

2002.8A Curing Compound shall conform to the current State Specs and when used, shall be sprayed on the concrete within one hour after finishing at the rate of one (1) gallon per two hundred (200) square feet.

2003 DESIGN SPECIFICATION

2003.1A Sidewalks shall have a minimum thickness of $3\frac{1}{2}$ " of concrete or other approved paving material. Sidewalk widths shall be those designated in the counter maps of the Department of Public Works, or as directed by the Engineering Inspector at the job site. Sidewalk cross slope shall be not less than $\frac{1}{8}$ " per lineal foot no more than $\frac{3}{4}$ " per lineal foot unless authorized by the Engineering Inspector. The optimum cross slope is $\frac{1}{4}$ " per lineal foot.

2003.2A Widened Sidewalk must be authorized by the Director of Public Works or his representative before installation is allowed. In those cases where the widened sidewalk is between the curb and the front of the established sidewalk line, the installation of one or more tree wells or tree well knockouts may be required by the city of Berkeley Forestry Supervisor. He should be contacted prior to the start of construction so that the number, location and size of the tree wells can be determined. All widened sidewalk shall be $3\frac{1}{2}$ " minimum thickness and shall not exceed $1\frac{1}{2}$ " per lineal foot cross slope unless authorized by the Engineering Inspector.

2003.3A Driveways. All driveway approaches shall be 6" minimum thickness of concrete. All driveway approaches which, in the opinion of the Director of Public Works or his representative, will receive sufficiently heavy truck use to qualify as a "commercial" driveway shall have $\frac{1}{2}$ " (#4) reinforcing bars on 18" centers, each way, embedded in the concrete 2" – 3" above the base. Driveway approach widths and dimensions shall conform to Standard Plan #8151. General notes for concrete flat work is available on Standard Plan #8144. The driveway apron shall be constructed in such a way that a minimum 6" water barrier is maintained between the gutter flowline and the front sidewalk line (or within 4 feet of the gutter flow line where no sidewalk exists) unless specifically exempted by the Engineering Inspector.

2003.4A Curb and Gutter shall be standard vertical curb and monolithic 24" wide gutter as shown on Standard Plan #8145. Curb shall be standard vertical curb as shown on Standard Plan #8146. General notes for concrete flat work is available on Standard Plan #8144. Where adjacent curb or curb and gutter is non-standard, or where authorized by the Engineering Inspector, an alternative design may be allowed provided permission is sought and obtained prior to the start of construction.

2003.5A Concrete Finish. Sidewalks and driveways shall be finished using a wood float applied with circular motion or, where the street slope or driveway slope is less than one (1) foot in 8 feet, with a medium soft broom stroke in a direction perpendicular to the curb. Where the existing adjacent sidewalk finish is still sufficiently visible to determine the method used, every effort should be made to match it as closely as possible except that steel trowel or slick finish concrete is strictly prohibited in any case. Curb and/or gutter shall be steel troweled and lightly brushed to remove the trowel marks. Any finish other than these standard concrete finishes must be approved by the Engineering Inspector prior to the start of work.

2003.6A Control Joints or weakened plan joints approximately 1/5 the thickness of the concrete in depth and 1/4" maximum width shall be placed using standard commercially available tools or control joint filler material as directed by the Engineering Inspector and in conformity with the following standards: transversely (perpendicular to the curb) about every 10 - 12 feet in all sidewalks, widened be installed at edge of driveways, curbs and/or gutters. Additional transverse joints should be installed at edge of driveways where the thickness changes, at tree well corners, at beginning and end of curb returns and at projecting corners of existing sidewalk or other structures where contraction cracks are likely to occur. Longitudinal (parallel to curb) control joints shall be installed in driveways in alignment with front and back edges of sidewalk, in sidewalks, widened sidewalks and driveways to align with the back of curb, when curb and flat work are poured monolithically (together) and along back of sidewalk at entry walks. On long continuous sidewalk pours or in known earth movement areas, control joint filler material may be required by the Engineering Inspector in addition to the regular control joints. Wherever possible, control joints shall be placed to coincide or align with score marks.

2003.7A Score Lines shall conform to the same pattern established in the existing adjoining sidewalk or driveway. Where there are conflicting score patterns on the block, or where the entire frontage is being replaced, the Engineering Inspector may approve an alternate score pattern.

2003.8A Paving Brick or paving tile (pavers) shall be embedded in 1/2" thick minimum mortar over a minimum 3" thick concrete base when installed in the sidewalk (6" concrete base in driveways). The mortar joints between bricks shall be finished flush or only slightly depressed below the pavers' surface. In residential areas, or low pedestrian use areas, alternate installation methods may be approved by the Engineering Inspector for paver installation in the parking strip or behind the sidewalk.

2004 CONSTRUCTION METHODS

2004.1A Subgrades shall be compact and of an even grade. Soft spots shall be removed and backfilled with Untreated Base as directed by the Engineering Inspector. Subgrade shall be thoroughly wet prior to placing concrete.

2004.2A Base Construction, when required by the Engineering Inspector, shall consist of 2" minimum thickness of Untreated Base (see Materials). The base shall be compacted to an even grade with no pockets or irregularities and thoroughly wet prior to the placing of concrete.

2004.3A Existing Concrete curbs, gutters, sidewalks and driveways shall be saw cut to a minimum depth of 1½" (1" for sidewalks) along the nearest score line adjacent to the area being replaced where an existing control, expansion or cold joint does not exist to provide a neat edge from which to finish the new work. The existing flat work shall be under cut 2" minimum vertically horizontally to provide a "key" to decrease the possibility of future sidewalk lifting. Under certain conditions, dowelling may be required as described in Standard Specification #20.

2004.4A Forms shall be set at the correct line and grade in compliance with the Design Specifications above and in accordance with good Engineering practice.

WARNING: Concrete shall not be placed until forms have been inspected and approved by the Engineering Inspector, or when atmospheric temperature is less than 36° F, or when rainfall is imminent. The permittee is advised to have on hand plastic sheeting, ready to cover concrete surface, when working in threatening weather.

2004.5A Finishing Methods. For sidewalk or driveway construction, immediately after the concrete is placed and screened, concrete shall be bull floated or wood floated, edged and control jointed. When concrete has set long enough to evaporate all bleed water from the surface (2 – 4 hours after placement, depending on weather), the second floating may commence (the sprinkling of dry cement to absorb excess surface water is prohibited). The second floating should be done with a wood or metal alloy float. If a broom finish is desired, a third floating with a steel trowel is recommended. After completion of the floating operations, the score lines should be installed, using a straight board and/or snapped line as a guide, the edges and control joints re-done if necessary and the final surface finish installed.

For curb and gutter construction, the concrete, immediately after placing in the forms, should be rodded (rapid up and down movement with a piece of reinforcing steel or other rod in wet concrete) and the forms struck with a hammer to distribute and compact the loose concrete. The top should then be screeded, edged and control jointed.

As soon as concrete has gained sufficient rigidity to remain in place without slumping (24 hours after placement, depending on weather), the front curb form shall be removed and the curb face control jointed, steel troweled and brushed.

Special finishes, such as exposed aggregate, colored concrete, patterned broom, etc., shall be finished according to standard construction methods, which shall be discussed with and approved by the Engineering Inspector prior to the placing of concrete.

Curing compound should be sprayed on sidewalks and driveways when the outside temperature exceeds 70°, or if other atmospheric conditions make such treatment advisable.

2004.6A Form Removal and Clean Up. Forms, other than curb face forms, shall be removed no sooner than 12 hours after finishing has been completed adjacent to new concrete created by the installation and removal of forms shall be filled to the proper grade with soil or other suitable material. Any street paving removed to facilitate the construction of a curb, gutter or driveway shall be replaced by repaving the open area with asphalt concrete in accordance with standard City of Berkeley specifications or as directed by the Engineering Inspector. Any defaced concrete shall be repaired within 24 hours of the final finishing operation by rubbing with a stone and water and rebrushing or other method approved by the Engineering Inspector. If, in the inspector's opinion, the defacement is too severe to be repaired, the concrete shall be saw cut along the nearest score line to a minimum depth of 1½", removed and replaced with new concrete. All tools, barricades, debris, forms, etc., shall be removed from the site before traffic is allowed through the work area.

2004.7A Protection of Work. The installer shall protect his work in accordance with good engineering practice. Normally, new concrete should not be opened to foot traffic for 24 to 72 hours, nor to vehicular traffic within 72 hours, but in no case will concrete be opened either to pedestrian or vehicular traffic in less than 24 hours after finishing. The permittee or his installing agent is responsible for the protection of the work. The use of suitable signs, barricades and lights, and the maintenance of pedestrian and vehicular safety is required.

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